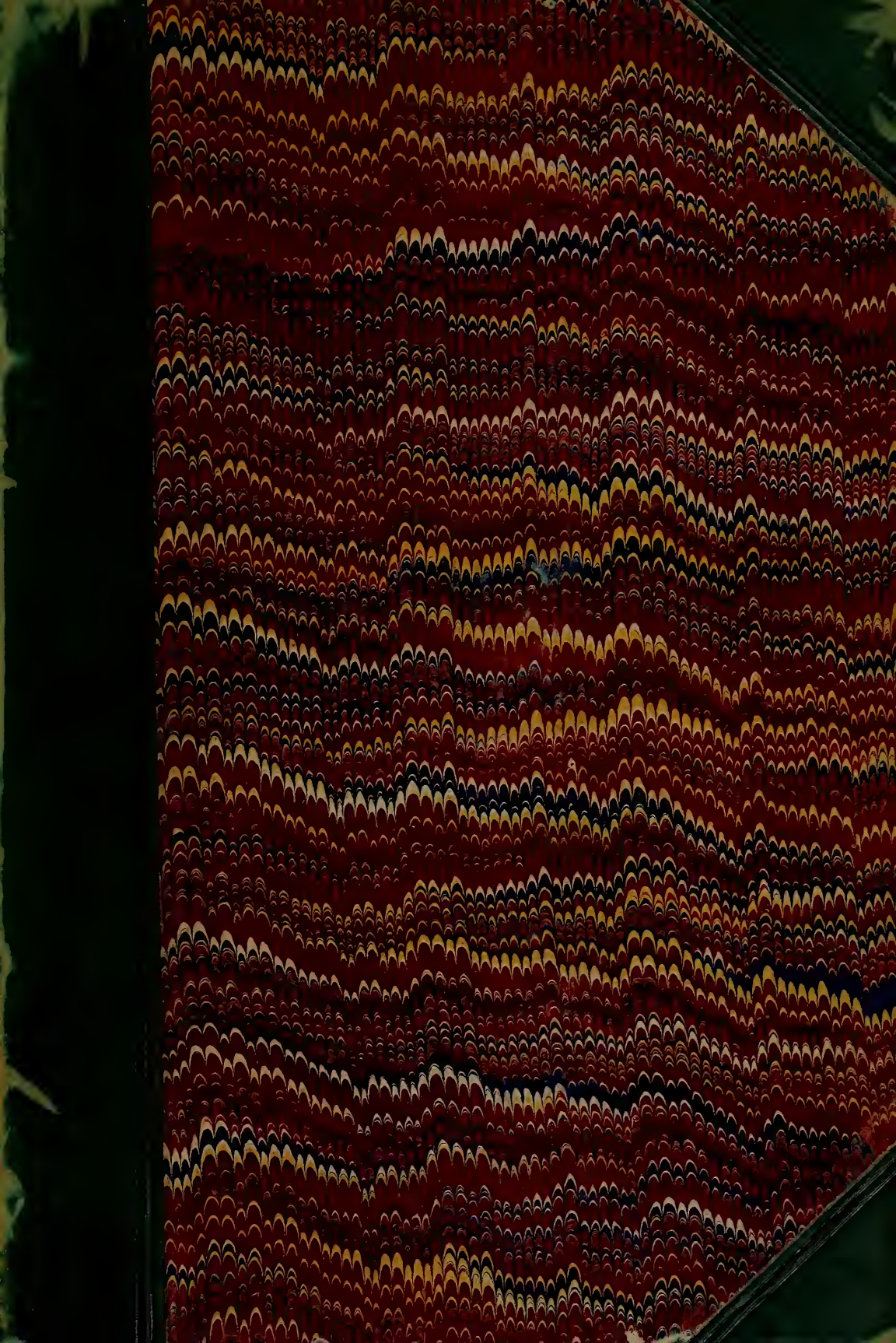

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New England. January.

California. January.

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THE

California Horticulturist

AND FLORAL MAGAZINE.

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NATIVE TUBEROUS-ROOTED CARAWAY.

BY DR. A. KELLOGG.

Of these we have in California two species deemed worthy of special notice:

Carum Gairdneri is the most important, because it promises most both to the gardener and the florist. A particular description is needless, as in general appearance, and indeed in every way, it is the exact representative congener of the European Chervil on the Pacific Coast. The flowers are the most perfect chaste white, and for an umbel the neatest beauty we ever saw. The only merit that saves it from being shoveled like a Potato is its small size. We have had it cultivated occasionally, but never with sufficient persistence and care as to do anything like justice to it, nor are our opportunities for the future likely to prove more promising. For this reason mainly we invite attention to it, in hopes that those who can may be induced to prove for themselves its value—not for commercial export, for it is useless to suggest, much less urge, this upon the mere dollar-and-cent cultivator, as we have done for a quarter of a century. What is desirable is simply to so establish its introduction that the fancy gardener and amateur florist may have a new dish of rare delicacy for the rural repast, and another charm for the flower-vase. Nothing of the kind, we feel sure, can excel it. The roots, as observed, are small, seldom over half an inch in diameter by two or three inches long, pure white, with a creamy cuticle. Eaten raw as they are dug, they are delicious; but their exquisite sweetness and flavor is greatly improved if kept until about half-dried. There is not the least doubt that with skill in choice of suitable conditions, soil, etc., from 200 to 300 bushels to the acre could be raised. We have eaten them in soups and various ways, and have often sent the seeds abroad, but their vitality soon perishes, unless great care is bestowed in packing, as well as speed in transit. It is a hardy plant, suited to cold climates and damp well-drained rocky, gravelly, or mixed clayey loams, especially "dry runs."

BASKET PLANTS.—These plants often suffer from too much or too little water. If from too little the leaves curl or fall. If too much they get yellow and drop off. As a rule a basket should be soak-about once a week.

CLOUDS—RAIN.

BY NATURALIST.

The horticulturist has often reason to be interested, if not anxious, about the state of the weather. The florist especially dislikes either too much rain or too long a drought. The health and good condition of plants depend much upon the state of the weather and atmosphere. The meteorological conditions of California are quite peculiar as compared with the rest of the States and Territories. The near vicinity of a vast ocean, with several mountain tiers running up and down at different distances on our slope, exercise the greatest influence on our climate. We may describe the clouds generally which visit us, as well as other portions of the globe, as visible vapor suspended in the air at some distance from the level parts of the earth. Possessing the shifting, formless, shadowy character of vapor, becoming visible or remaining invisible, according to minute changes of temperature in different parts of the sky, they combine outlines with peculiar striking colors and other characteristics, with a capacity for change that is almost unlimited.

Clouds carry water from the ocean to the mountain tops, they signal the occasions on which the electric forces balance themselves, they cause important modifications of light and heat on the earth, they are connected with the production of frost, they add to the picturesque effects which the landscape painter and the admirer of nature love to study, and they offer to the poet innumerable suggestions and similitudes. What, then, is a cloud? If you go into a laundry on a washing day, you probably find the whole of the upper part of the room full of steam. That steam is cloud. It can't get away—being confined to the room. If it could get away it would be taken up, absorbed by the drier air without, and be apparentently dissipated, just as a sponge takes up a certain quantity of moisture. When your kettle "steams" it makes a cloud. Now, the air is generally in a state that will enable it to take up a certain quantity of moisture, more or less, according to its temperature and other conditions; but as aqueous or watery vapor in the air is invisible under ordinary circumstances, and when condensed by sufficient cold becomes *rain*, there must be intermediate states between the two, and these intermediate states are the varying conditions of *clouds*, which we see above our heads in every condition and shape. Fog and the cloudiness in a room full of steam are only similar varieties of watery vapor. Those who have ascended high mountains and passed through clouds, as they must do, have found that the clouds, when they were in them, were just like fog, that they got above and completely out of them, and that the chilly air seemed to keep vapor in a visible state, when any was present. Thus, the vapors of the earth and sea, condensed by cold, and rising in the atmosphere to a region of air lighter than themselves, form clouds or layers of visible vapors. Clouds are generally moved by the wind, and sometimes by electric action. They may be often seen meeting from opposite directions, and then, after discharging their opposite electricities into each other, vanishing altogether. The most cloudy countries are those where the winds are most variable, as Britain; the least cloudy countries are where the winds are least variable, as Egypt, and, in a less degree, California.

In the higher regions of the atmos-

phere, where the clouds are chiefly formed at the meeting of two currents of different water capacity, sets of small clouds are produced, all nearly of the same form, as all are due precisely to the same cause. Thus we have the mare's-tail and mackerel skies, and other kinds, where numerous light fleecy clouds appear at a great elevation. These are called *cirrus* clouds, from the peculiar curl they often present. They present very varied and singular appearances. They are probably never less than three miles from the earth, and sometimes much more. Their color is generally the purest white before the sun sets, contrasting finely with the rich full blue of a clear sky, and at sunset or sunrise they are often of a lovely light vivid crimson, sometimes with the richest blue colored sky above, and a fine emerald below them. Just such a sunrise I observed the other morning from Oakland wharf, whither I had gone thus early to angle for the young salmon, which are now coming into our bay from their ocean haunts and feeding-grounds, to spawn in some of the rivers connected with our harbor. When these clouds (the *cirrus*) are more dense, occurring at somewhat lower levels, and accumulating in large quantity, but still retaining their banded appearance, they pass into another kind, called *cirro-stratus*, which resemble loose masses of carded cotton, and often pass rapidly into rain-clouds. *Cirrus* clouds are often seen near the horizon at sunset and sunrise, but it is on a fine summer's evening in the East, and during our winter season in California, when the loftiest vapors become tinted with the rich warm glow of the setting sun, that they are most beautiful. The clouds called *cumulus* differ from those just described in many essential characteristics. They appear to be formed near the earth, in our rainy season, and ascend gradually during the day. Such clouds are not often picturesque, but they not unfrequently present very grotesque and varied forms, changing with the most remarkable rapidity, melting away in a singular manner. When large, they cover the heavens, and altogether obscure the sun, being in this state entirely without form and beauty; but whenever they are broken up, even the heaviest clouds are capable of presenting wonderful variety, and the most exquisite softness of penciling. Like the *cirrus*, the *cumulus* is frequently in layers or strata, and is then called *cumulo-stratus*. The true rain cloud (*nimbus*) is limited to a moderate distance from the earth, probably not extending to more than 4,000 to 5,000 feet. When these rain clouds appear a little above the horizon, fleecy, or like the rolls of smoke, rain is almost sure to follow the night after or the next day. We observed this before our last rain storm. These clouds are admirable studies for the artist, as well as strikingly adapted to excite the imagination of the true lover of nature, especially after they break upon the rain ceasing, and they gather up into white mountains, with the blue sky in patches between them. The colors and shadows of clouds are not less varied and beautiful than their forms. When the sun is near the horizon, and its light shines through a considerable thickness of vapor, the color transmitted is always red, an excess of the yellow and blue rays being absorbed. Close to the western horizon however, when the sun is about to set, and the clouds are not too thickly congregated, we find also every conceivable variety of yellow, passing from the palest and purest tint to the deepest and richest admixtures of yellow with red.

Blue is a color rarely found in clouds, never by itself as a pure color, and rarely in mixture either with yellow as any shade of green, or with red as in shades of violet and purple. The latter is, indeed, the most frequent of such admixtures; but it is generally to be accounted for without ever being actually obliged to admit it as a positive tint belonging to the cloud itself. Green clouds and a green tint of the sky are not, however, extremely rare. Our sunrises and sunsets certainly equal, if they do not surpass, the Italian so much praised by travelers there. Our tints of landscape and sky are certainly very fine and delightful to the eye, and they present themselves chiefly in our winter and spring months.

SALMON.

BY E. J. HOOPER.

The plea, or the excuse, for introducing this noble animal or king of all fishes in the HORTICULTURIST, or among the beautiful and interesting productions of nature in the vegetable world, is the same which has always prefaced our notices of angling and the inhabitants of the waters; namely, their connection with trees, bushes, flowers, birds, insects, and other pleasing and valuable objects of knowledge which ever surround the angler while pursuing his useful, amusing, and healthy art. For sport there is no fish equal to the monarch of the rivers and the lakes, and there are some great and eminent anglers who will not waste time on any fish less noble. Even the game and active trout, and the hardly less nimble bass, or powerful muscalonge or pike, will hardly ever tempt them to stray away from their lordly and swiftly rushing favorite. A fly-fisherman, with even a moderate-sized fish of the true salmon tribe at the end of his line, has no sinecure to effect his secure capture or landing, although he would be very unwilling to permit his labor to be performed by anyone for him. There have been instances of very large salmon being played for four or five hours, but we have never seen in such instances the angler, notwithstanding great fatigue, willing to consign his rod to a deputy. It is always rather a thrilling moment to find that, for the first time, one has hooked a good-sized salmon, and the event is apt to produce a nervousness and excitement that do not tend to the speedy landing of the fish. The first idea, naturally enough for a novice, is to wish to haul our scaly friend out of the water by sheer force, so much does he covet, at the first thought, possession of his victim; but this mode of action has of course to be speedily abandoned, for the fish, always making an astonishing dash, rushes away either up or down the stream in gallant style, taking out with it no end of line. Then when once it obtains a bite of its bridle, away it goes sulking into some great depths or rocky hiding places. In a brief time it comes out again with renewed vigor, determined, as it would seem, to try your mettle, and it dashes about till you become so fatigued as almost not to care whether you land him or not. It is impossible to say how long an angler may have to "play" a salmon or a large grilse, but if it sinks itself to the bottom of a deep pool it may be a business of hours to get it safe into the landing-net, or for the gaff (we prefer the latter, because the hooks often become entangled in the meshes of the net), if the fish be not altogether lost, as in its exertions to escape it may so chafe the line as to cause it to snap and and thus regain its liberty; and during

the progress of the battle, the angler, if fishing from the bank, has most likely to wade, and even sometimes to be pulled once or twice into a rather deep stream, so that he comes in for a thorough drenching, and may, as many have to do, go home after a hard day's work without being rewarded by the capture of a single fish.

There is abundance of good salmon angling with spoon-trolling, and in the spring and part of the summer with the fly, to be had in the northern rivers of this State and in Oregon, where board and lodging can be obtained at prices suited to all pockets; and there is nothing better either for health or recreation than a few days on a salmon stream. The plan which every angler ought to adopt on going to a strange water is to consult with some shrewd natives of the place or some experienced anglers, who will very likely be able to show him all the best places and pools, and aid him with their advice as to what baits or flies he ought to use, and give him many useful hints on other points as well. In California there is very little stoppage of the sport of some kinds of fishing during the whole year. It is, speaking now of angling generally, in fact a recreation that can be made here to suit all classes, from the boy, with his hand-line, to catch tomcods and shiners from the wharves, to the gentleman with his well-mounted rod and elaborate tackle, who hies away to the north in search of salmon that weigh from twenty to thirty pounds, or trout from half a pound to three or four, and require several days to stay and capture. Even the weather should never stop an enthusiastic angler, but on very bad days in our spring season, when it is not possible to go out of doors, there is the study of the fish, and their natural and economic history, which ought to be interesting to all who use the angle, and to the majority of mankind besides. And there is spread around the angler the interesting and instructive book of nature, botany and other sciences, to which we have often referred in these piscatorial papers, inviting him to the perusal. He can see the mild seal of California winter opened, and observe the balmy spring put forth its vernal power; note the turbid streams of winter as they are slackening their volumes of water; see the swelling buds and the bursting leaves; admire the wild flowers grow into blossom almost as he looks on them; hear the sweet notes of the mocking-bird, and the surrounding carol of the noiser birds; watch the sportive lamb or the timid rabbit; and chronicle the ever-changing seasons as they roll away on their everlasting journey of progress.

IS BOILER-WATER INJURIOUS TO PLANTS?

BY DR. A. KELLOGG.

In *The Garden* of London, England, Nov. 27th, Mr. Wells inquires as above, and further says: "It smells badly, and I am afraid injury will arise from its use. Will some of your readers kindly inform me, as I am obliged to use it?" etc.

A few days ago my attention was directed by E. B. Mastick Esq., to a singular phenomenon; briefly this: Not long ago the locomotive ran off the track at Mastick's Station, and the boiler was emptied. The exact area where the fluid fell is marked by an exceedingly rich vegetation, rendered more conspicuous by the poverty of the surrounding sand. The effect produced in this case is quite equal to so much guano spread over the ground.

This is sufficient answer to the question; but as a true *rationale* always adds force to any fact, and may often lead to its more general and intelligent application to use, it is well to say that abundant experience proves that where boiling water has concentrated the soluble vegetable matter, which greatly abounds in most waters—and also salts, silicates, lime, magnesia, potassa, phosphates, soda, alumina, etc.—a given quantity of such solution must be far richer in fertilizing ingredients already prepared for the food of plants. Of course, "it smells badly," as most rich manures do. By no means waste the boiler-waters, but consider your boilers fountains of fertility.

While upon the subject, allow me to suggest that if gardeners and florists will select some of their plants most difficult to bloom—those that may have proven obdurate for many years, such as Camellias, Oleanders, or indeed any —and make a slight trench some feet (according to size) from them, and fill this with that same boiler-water *boiling hot*, repeating it a few times during the weeks at the formative and developing period of blooms, and they will be astonished at their success. In general, the best mode of irrigating is that which percolates *toward* them, carrying its own and the soil's soluble substances to the haven of their desire.

PLANTING ORCHARDS.

Any person who designs planting out fruit-trees—and all farmers do at some time or other—will do well to read the suggestions made by J. J. Thomas in the *Fruit Culturist*, just out:

"A few experiments only are needed to convince anyone of the advantages of cutting in the shoots. Some years ago an orchardist carefully transplanted one hundred and eighty Apple-trees into good soil. The roots had been cut rather short in digging. One-half had their tops shortened back, so as to leave only one bud of the previous season's wood; the heads of the other half were suffered to remain untouched. The season proved favorable.

"Of the ninety which had their heads pruned only two died, and nearly all made fine shoots, many being eighteen inches long. Of the ninety unpruned eight died; most of them made but little growth, and none more than six inches. Both the first and second year the deep green and luxuriant foliage of the pruned trees afforded a strong contrast with the paler and more feeble appearance of Peach-trees, of large size three years' growth from the bud. ONE-HALF WERE HEADED BACK; the rest were unpruned. The season was rather dry, and twelve of the thirty-eight unpruned trees perished; and only one of those which were headed back. The unpruned which survived lost parts of the whole of the upper portions of their branches; the pruned made bushy heads of new shoots. In another instance, trees of one year's growth from the bud, transplanted in the usual manner unpruned, were placed side by side with others of four years' growth, and with trunks an inch and a half in diameter, the heads being pruned to one-quarter their size. The growth of the former was feeble; the large trees with pruned heads grew vigorously.

"The degree to which this shortening should be carried must depend much on climate. In the cool, moist atmosphere of England the leaves perspire less, and a number may remain without exhausting the supply from the roots. In this country perspiration is more rapid, and fewer leaves can be fed, until new roots furnish further supplies.

"Cutting back after the buds have swollen, or the leaves have expanded, seriously checks growth, and should never be performed except on very small trees, or on such as the Peach, which quickly reproduce new shoots.

"Trees which quickly reproduce new shoots, as the Peach, may be more closely shortened back than others having a less productive power, as the Apple. The Cherry throws out new growth still more reluctantly, and hence more care is needed in digging up the roots entire.

"Before the tree is set in the earth, all the bruised or wounded parts, where cut with a spade, should be pared off smoothly, to prevent decay, and to enable them to heal over by granulations during the growth of the tree. Then dip them in a bed of mud, which will coat every part over evenly, and leave no portion in contact with air, which accidentally might not be reached by the earth in filling the hole. The bed of mud is quickly made by pouring into the hole a pailful of water, and mixing it with the soil.

"It should not be set deeper than it stood before removal. When placed in the unfilled hole, if it is found to be too deeply sunk, a mound or hillock is to be made under the centre to raise it sufficiently and the roots separated and extended to their full length. Fine rich mould is then to be sprinkled or sifted over, taking care to fill all the interstices, and using the fingers to spread out all the fibres during the operation. The mellow earth should be raised two or three inches above the surrounding surface, to allow for its subsequent settling.

"In nearly all the soils, the use of water in settling the earth among the roots will be found eminently serviceable. Dashing in a few quarts before the hole is filled is the more common way; but an admirable mode is to settle fine earth as it is constantly sifted in, by a regular shower from a watering-pot, one man holding the tree, another filling in the earth, and the third applying the water. By this process the roots are not disturbed in their position, and every cavity about them is filled in the most perfect manner. The trees will be found to maintain their position better than when pulverized earth alone is used."

TREE AND OTHER PEONIES.

Peonies, with their crimson, pink, white and other colored flowers produced during a greater part of the months of May and June, were long great favorites in gardens, although they are now somewhat neglected, owing probably to the fact that they are so large that in small gardens they would occupy too much room. There are, however, generally to be found, even in gardens of limited size, spots so much shaded that scarcely any flower will thrive in them. In such places Peonies would grow luxuriantly; the color of their blooms would, in many cases, be even more intense, and they would last much longer than flowers fully exposed to the sun. They may, therefore, be made useful as well as ornamental, even in small pleasure grounds, although the proper place for them is undoubtedly the fronts of large shrubberies, plantations, or by the sides of carriage drives. Where distant effect is required, no plants so admirably answer the end, as their size and brilliancy render them strikingly visible even at long distances off. Planted in straight lines on either side of a grass walk, the effect which they produce is admirable, especially in the morning and at or near sunset; and when planted in masses, as, for instance, in beds in pleasure-grounds,

they are invaluable for lighting up sombre nooks. Peonies grow best in light, sandy loam, and need but little attention—digging around and manuring in the winter, and some care in tying them up neatly in spring, being all they require. They may be readily increased, but it is most injurious to divide the roots too often, as, in that case, the constitution of the plants is weakened, and they generally take some time to recover their usual vigor; nor should they be dug up and removed too frequently, as this checks their growth for a season at least. Tree Peonies form, as is well known, robust early spring-flowering shrubs, varying from two to four and five feet in height, and bearing blossoms of extraordinary size, brilliancy, and beauty. They succeed well in all ordinary garden soils, exclusive of peat, unless found upon a deep dry sub-stratum. Blooming as they do early in the year, they occasionally require some slight protection to preserve the blossom buds from late frosts. I have seen them used with good effect on grass plots. They have a fine appearance in a mixed border of shrubs. Their blossoms are of various shades of color, from paper whiteness to the most brilliant crimson and purple shades, and the plants are of such free-blooming habit that they become literally covered with their immense blooms during the summer months. They may be transplanted either in autumn or in spring before they make their growth. They are propagated by root division, by grafting on the roots of herbaceous varieties, by taking cuttings from the young shoots in spring and striking them under glass in a little heat, and by layering young shoots after ringing round each bud, so that each bud forms a plant. Some of the best varieties are *Alba grandiflora*, *Atro-purpurea*, *Carnea plena*, *Lactea*, *Lilacina*, *Ocellata*, *Papaveracea*, and the white and red double forms; Purpurea, Robert Fortune, Rollissoni, Rosa Mundi, Triomphe de Grand, Triomphe de Malines, *Versicolor plena*, *Violacea purpurea*, and Zenobia.—*The Garden.*

RAISING EARTH ROUND TREE-SHRUBS.

During the last twenty years I have often met with instances of the mischievous effect of raising the soil round the trunks of living trees; in some cases, where only a few inches had been placed round the collar, the result was as disastrous as where the trees had been buried to a greater depth. In making alterations, sufficient care is not always exercised in this matter; and as, perhaps, for a few years no perceptible diminution in the vigor of the tree is noticed, the whole thing is forgotten until the tree becomes sickly, and ultimately dies, when, perhaps, the result is imputed to some other cause. About four years ago a fine old Walnut-tree, standing in the grounds here, exhibited symptoms—by its annually decreasing growth and early leaf-fall—of declining health. On examination, it was found, that during some alterations a few years ago the earth had been raised about eight inches round the trunk, and the bark round the collar was in some places decayed, but owing to the sinuosities of the trunk, the air, perhaps, had not been so effectually excluded as it would have been in the case of a younger tree, and, therefore, the ill effects had been longer delayed. The earth was at once removed down to the original level, so that the tree stood in a kind of basin, with sloping sides and a diameter of about ten or eleven feet. I am glad to say the condition of the tree is fast improving, and that it will ultimately re-

cover. Only the other day, I took up a Sycamore-tree that was past recovery from the same cause. I have, however, never met with any ill effects from raising the soil over the roots of trees, provided the trunk was not touched by the new soil; but, in some instances, increased vigor has been imparted to unhealthy trees by having top dressings of good fresh soil. Wherever it is necessary to raise the soil in the neighborhood of large handsome trees, if the surface is sloped upward from the tree for three or four feet round the trunk, no harm will follow, or the earth may be supported by brick-work a foot or so from the trunk, and fitted with wooden gratings round the trunk at the top, for the purpose of securing a due circulation of air; only the gratings will have to be inspected occasionally, to see that the place is clean.—*E. Hobday, in London Garden.*

DEEP PLOWING.

A previously formed opinion that deep plowing is a good thing for the land, was strengthened by a conversation with an intelligent farmer the other day. The gentleman narrated some of his own experiences in cultivating the soil and gave the result of his observation of the operations of others in the same line—all of which was testimony in favor of deep plowing. In one instance spoken of, one portion of a field of wheat was plowed somewhat deeper than the rest (the cultivation in other respects and the soil being the same); and a considerably larger yield resulted on the part plowed deepest. The theory of deep plowing is a plausible one; namely, that by it the partially exhausted soil of the surface is turned under and its place supplied by that from below, from which less of the nutritive matter has been drawn by the previous crop; and also that the stirring up and pulverizing of the soil to a great depth enables it to absorb moisture more readily and to impart its nutriment to the growing vegetation more liberally. As the surface of the land becomes impoverished in a degree, as it inevitably must, by constant cultivation, a greater depth of soil should be stirred and new matter brought up for the seed to take root in and draw support from. And this is especially true as regards the wheat lands of California from which the same kind of a crop is taken year after year, and nothing put on to the land in return for what it yields. The Eastern farmers have learned this lesson, and deep plowing and sub-soiling have become the rule there, much to the advantage of the farmers, who find that their old fields are rejuvenated by this process. Although the Eastern farmer and Eastern farming as a rule can not safely be taken as models for California to adopt, something may be gained, by not a few of our farmers, by the adoption of the Eastern style of plowing. We suggest that this hint be experimented upon the present season, and we should be pleased to learn of the results of any such experiments.—*Texas Farmer.*

OBJECTS OF PRUNING.

When a tree is starved, and for that reason is making but little annual growth, the first thing to do is to feed it with the food ingredient that the soil may lack; but we may assist it back to a normal condition of thrift and health by reducing the number of its growth points by disbudding, or by "heading in," before growth is fully started in the spring.

So, too, when a tree is robbed by

other and greedier roots invading its soil; as when Blue Grass sod catches the moisture and the food gases which come in from above ground and keeps them from the tree roots; or, as when the greedy proprietor demands from the orchard a crop of small grain, or as when lustier, hungrier roots of other trees, like the Willows and Poplars, sap the stock of food from the soil; the first thing to do is to choke off the robber, then enrich the soil, and then in spring reduce the number of growth points so that all left can put forth thrifty leaves and make strong growth.

And again, if severe droughts have prematurely checked growth, and then the rains come and growth is resumed, it is usually best to interfere and stop part of the points of extension, by pinching as soon as they start.

Or, when the always trying winter has come with its cold and dry winds, so hard that many or most buds are weakened, and the fluid of the tree—the sap—has been actually altered from its normal condition by too great evaporation, and too great and too equally sudden changes of temperature, we should interfere when growth is about to begin for the season, and by removing part of the buds, turn the whole of the tree's energies to fewer points, to the end that the physiological action may be more perfect and stronger.

IS THE ANGLE-WORM A FRIEND?

A correspondent of the New York *Times* writes: My garden Turnips are badly scarred and grooved by worms. As I find no worms in contact with the Turnips but earth-worms, the presumption is that the mischief is done by them. In several instances I found the mouths of the worms in the grooves, the fresh surface of the Turnip affording unmistakable evidence that the worms were then and there engaged in their nefarious work. In two instances, a worm had eaten a hole into the body of the Turnip, nearly an inch in depth, and was so firmly wedged in that it was almost impossible to extricate it without breaking it. It may be objected that, as earth-worms have no teeth, they can not be the cause of the observed effects. They may, however, by sucking out the natural juices of the Turnip destroy the vitality of the part, and so cause its gradual destruction and the characteristic grooving of the Turnip. A neighbor, who is an experienced gardener and an observing man, frequently finds the tops of his Onion leaves drawn into holes in the ground, and looking as if they had been parboiled, or, as he expresses it, "the juices sucked out." On digging into these holes, to ascertain the cause of the evil, he has found earth-worms apparently engaged in feeding upon the Onion leaves. Agricultural authorities, on the other hand, tell us that the earth-worm feeds only upon dead and decaying vegetable matter. Will the agricultural authorities please give us equally good evidence in support of their theory?

FRUIT AND FRUIT-TREES—BEST VARIETIES FOR PLANTING.

The December number of the *California Agriculturist* presents us with a very important and useful list of the different varieties of fruit-trees for the home orchard and for profit, most suitable to our peculiar soil and climate. This selection is doubtless the result of many years' experience in the cultivation of fruit here, and will conduce much to the benefit of all orchardists, especially beginners:

Early Apples—Three Red Astrachan;

two Red June; two White Astrachan; two Golden Pippin; three Skinner's Seedling, or Maiden's Blush; one Gravenstein; one early Sweet Bough, for baking. The Golden Pippin is a very tart Apple, making it desirable for cooking and drying. It does not dry white as some; not so fine for market as for home use. The Gravenstein falls from the tree badly before ripening, but is fine for eating. Skinner's Seedling hangs well to the tree; is an extra eating and cooking Apple.

Early Winter Apples—Six Yellow Bellflower; two Jonathan.

Late Keeping Apples — Ten Yellow Newtown Pippins; three White Winter Pearmain; one Nickerjack, and one late Talman's Sweet. This makes thirty-four Apple-trees, all extra good kinds for California. There are other sorts, favorites with some. Of course, we advise each person to have a tree of *his* favorite in addition to this list.

The Apples that dry white, and are in demand by the Alden factories for desiccation, are Skinner's Seedling, Gravenstein, Smith's Cider, Fall Pippin, and Yellow Bellflower. For an Apple-orchard for profit, where winter Apples ripen late, as in Santa Clara County, and keep well, the Newtown Pippin is the very best one to plant. Some orchardists say the *only* one from one acre to a hundred acres would be the Newtown Pippin.

Early and late Pears, as they come in succession—Two Dearborn Seedlings; one Madeleine; two Beurre Gifford; five Bartlett; one Seckel; one Flemish Beauty; three Beurre Hardy; two White Doyenne; two White Morceau; three Winter Nelis; two Easter Beurre. There is no better flavored Pear for drying or canning than the Bartlett; but owing to the softness of the core when ripe enough to dry nicely, it will not hold to the fork of a paring machine, and is not so profitable for the drying factory as the Flemish Beauty, which is round, smooth, easily worked on a machine, and is one of the very nicest drying Pears. Swan's Orange and Glout Morceau are also fine drying Pears, where machinery is used. The best shipping Pears for the Eastern markets are the Winter Nelis and Easter Beurre. At one time the Bartlett and Beurre Hardy were thought the best, but they do not keep well, and arrive there when Eastern Pears are plentiful, while the winter varieties get there in a sound condition, and at a time when Eastern Pears are not brought into competition at lower prices.

Quinces—Two Orange variety. Quinces are exceedingly good baking fruit, and for canning, either alone or with Pears.

Plums—One Cherry Plum; two Early Golden Drop; two Royal Hative; two Jefferson; three Columbia; six Green Gage; five Ickworth's Imperatrice; two Coe's Late Red. The latter Plum will last till Christmas, and is desirable chiefly for its late-keeping qualities. Best for canning, Green Gage; best Plums for drying are Jefferson, Washington, Ickworth's Imperatrice, Columbia, Reine Claude de Bavey, General Hand. Soft, mushy Plums are not desirable for drying, but the Plum that has a rich flavor, solid pulp, and is easily pitted, is a drying Plum. The Quackenboss is called the best shipping Plum, owing to its beauty and keeping qualities.

Peaches—One Hale's Early; one Early York Serrate; one Crawford's Early; three Grosse Mignonne — one of the finest Peaches in cultivation and valuable for canning; one Late Admirable; Crawford's Late; two Old Mixon, cling; two Lemon, cling.

Nectarines—One Hardwick; one New White.

Prunes—Two Grosse Prune d'Agen; three Petite Prune d'Agen; two Fellenburg. The Fellenburg, or German Prune, is the best drying Prune, and is coming into high favor on that account very fast. It pits *naturally;* is high flavored, with firm flesh. The Petite Prune d'Agen stands second, but is rich and fine, though small. The Grosse Prune d'Agen is best for shipping, owing to its beauty, size, and solidity. It adheres to the pit too tenaciously to be a favorite for drying.

Apricots — Two Early Golden; two Moorpark. Nice for cooking, canning and drying, as well as for eating.

Cherries — Two each of Governor Wood, Black Eagle, Black Tartarian, Black Arabian, Coe's Transparent, Kentish or Pie, Cleveland Bigareau, Napoleon Bigareau. The Black Tartarian is the most profitable market Cherry, owing to the regular and good bearing quality of the trees, and the solidity and carrying quality of the fruit, which will not discolor when bruised, and is large, handsome, and of fine flavor. There is no better canning fruit than this Cherry, also good dried.

Figs—Take a variety. The Black Brunswick, White Smyrna, and Brown Turkey are as good as any.

Grapes — Two vines each of White Sweetwater, Isabella and Catawba for a trellis, ten Rose Peru, ten Flame Tokay, fifty White Muscat of Alexandria, ten Black Hamburg, ten Black Malvoisie, ten Black Morocco. The White Muscat of Alexandria is the very best raisin Grape. Any family can make their own raisins nicely and send some to market. The best shipping Grapes are White Muscat of Alexandria, Flame Tokay, and Rose Peru, so far as tried, for profit.

Berries — Blackberries — Fifty Lawton, fifty Kittitinny; twenty-five Raspberries; twenty-five Houghton Seedling Gooseberries; twenty-five Cherry Currants; of Strawberries, the Longsworth Prolific and Jocunda prove the best.

The *Agriculturist* mentions also Olives, Oranges, Lemons, Citrons, Walnuts, Almonds, Chestnuts, Mulberries, and Mespilus. The advice which is given by those orchardists who have grown fruit extensively is to have few varieties, preferring those which ripen early or late, so as to avoid the low prices that prevail for three months in the middle of the fruit season.

IRRIGATION IN WINTER.

The need of irrigation on most of our river lands only applies to a dry season, or to late summer, for the purpose of raising a second crop. On a great part of the lands, however, more crops of alfalfa can be cut with occasional irrigation than without. It always pays, too, to keep the ditches ready for drowning out gophers—the only enemy in this section of the country to the prolific alfalfa. These pests are constantly at work. One of them will fill up a new mound every morning, covering a spot of grass often two feet in diameter at its base. The grass is killed under it, and the tramping of stock only spreads it over a larger surface. During the season the place is seeded again, but the mounds then seriously interfere with the mower, and give the field a neglected appearance. On a farm near town a Chinaman is exclusively engaged, a good part of his time, in directing the winter water over the ground, drowning the gophers and leveling their mounds. Dogs are trained to catch them, and they will detect every one of the pests that have crept up into the mounds above water,

by passing their noses over them. Crows hover over the flood, and pounce on the gopher as soon as he comes to the surface, and the butcher bird will sit on the fence and catch the young as they follow the old ones out of the holes. The work has demonstrated the fact that the winter irrigation fertilizes the ground better than at any other season of the year. The rains wash the better part of the soil of the hills into the streams, and the water is laden with the riches of an immense territory stretching for hundreds of miles. A tank of water, filled from a hydraulic ram, only had a deposit of a quarter of an inch from the 1st of May to the 1st of November; while from that time to the present, after the rains, the deposit of sediment was upward of three inches. The sediment is the richest of the surface soil, and when dried will cut like cheese.

No better evidence can be required to induce every one to take the benefit of the abundant waters of the winter. Often, by improving the time, the December irrigation will supply the moisture of a whole winter's rain, and make the crop a certainty when overtaken by a dry season. With the knowledge of the great advantage, it would be sheer neglect to overlook the importance of such timely watering, and none but an imprudent farmer would fail to avail himself of it.—*Southern Californian.*

ORCHARD PESTS IN CALIFORNIA.

It is not more than a half-dozen years since the horticulturists of California were proclaiming exemption from all the insect pests which made fruit-growing in the East such a precarious business. But the tables "have turned" more rapidly than expected, and curculios are at the California Plums, coddling moths at their Apples, and peaweevils come to us in entomological specimens from the Pacific slope, showing their presence in that supposed never-to-be-infested region. But worse than all this, there now come statements which show that the much dreaded Grape louse (or *Phylloxera*) are at work in the vineyards. Great is the consternation produced among the Grape-growers of California at this discovery, and they have good cause for it, inasmuch as this pest has caused immense losses in the vine-growing regions of Europe, and thus far no practical remedy is known. The dry soils and climate of California will doubtless prove to be congenial to this root-inhabiting pest of the vine, consequently the vineyardists of the Pacific slope may have to bestir themselves in finding a preventive, else see their vineyards destroyed. The paradise for fruit-growers appears to be still a *terra incognita*, although frequently announced of late years as having been found.

FLOWER MARKET FOR SAN FRANCISCO.

Years ago the city of Milwaukee (when it was about half as large as San Francisco) had its flower market, and in the early months there was always a crowd gathered about the stalls where bouquets and potted plants were sold at prices which made it possible for the poorest to enjoy them. The German market gardeners vied with each other in producing the earliest Stock Gillies, Pansies and Verbenas, as well as Peas and Cauliflowers. Scarlet Salvias, Geraniums and Phloxes for bedding out were raised in great quantities, and if wedding or funeral flowers were wanted they could always be had there. I was acquainted with the rarely stocked greenhouses of Alexander Mitchell, the Midas of the northwest, but all his

money could not make such pots of Calceolarias, such Chrysanthemums, as those broad-faced German women sold for sixpence.

It was the fashion there, created by the elegant German ladies who pride themselves on their thorough knowledge of domestic matters, for housekeepers to do their own marketing, and it was pleasant to see the Daisies and Forget-me-nots added to the vegetables stores in their ample baskets.

In California I see a great many fine places planted to order, and then given up to the gardener, just as the house-furnishing is given up to the upholsterer; but not many where every shrub and plant has been put into the earth by the mistress' hands, and whose every adornment could tell a story of some white day, or remembered visit to a friend. Floral decorations for the table are now coming to be esteemed as indispensable luxuries, but to me they lose the sweetness of their meanings when they minister only to the display of wealth. How charming it would be for ladies to go out to a flower market, make their own selections, and a morning's work of weaving bouquets and table decorations which would soften the glitter of crystal and gleam of silver on their dinner tables! How much tenderer the association of the flower cross woven by loving fingers! What would we think of a letter of condolence or congratulation ordered from the stationer? Thought and affection give value to the most perishable things.

Again, a flower market, such as San Francisco might easily sustain, would be a great attraction to the strangers within our gates. They come to us through the snowy pathways of the mountains, in numbers increasing constantly, and the bright flowers are their best welcome. They will look at the Veronicas and Fuchsias through iron railings, and catch the perfume of the violets; but a sixpenny pot carried home to the hotel is worth more in making contented citizens of them.

An impression of the abundance of beauty ought to be made with the flowers as well as the fruits. And this reminds us of the flush of color, the fine display of autumn's wonder work, that came to us the day after Thanksgiving, from Alhambra Gardens, in shape of a box of leaves, rivaling those of New England Maples. We brought them here, to make our lodgings home-like, and they brighten the walls as I write —the Abutilon leaves, singularly mottled with golden spots; the yellow Pear leaves, with ruby veinings, and the deep sinused crimson Grape leaves, which Bacchus might have worn for his crown.

I once sent Ole Bull a single leaf of the swamp Maple from a Wisconsin bog, laid on a sheet of Chinese rice paper, on which was written the date of his sixtieth birthday, and back from Europe came a request for more leaves of "that tree," which taught so sweet a lesson of a ripened life. Such another leaf I have not found, and there are few such autumnal days for any of us as the white haired angel of the violin enjoys ere he is gathered home, but if we want a well colored, well ripened autumn, we must gather music and flowers into our daily lives. We must feed upon truth, beauty and goodness. For the sake of the children born and bred in city streets, let us have a flower market in San Francisco.—*Jeanne C. Carr.*

Ample fruit on a farm pays for itself in every regard—in improved health of the farmer's family, in diversifying the salable products of the farm, and in adding tenfold to the worth of the land.

PURE AIR AND MOISTURE FOR HOUSE PLANTS.

House plants are things of life which require pure and warm air and moisture as well as animals. A wide pan of water should always be placed on the stove or in the heating furnace at a point where it will be heated enough to send off vapor into the air, and it should be kept supplied with water at all times. Towels, napkins, or other cloths hung near the fire and wetted as often as they become dry will impart an agreeable feeling to the air of a warm room. Every lady must have noticed how pleasant the change from the dry sitting or dining room to the kitchen or laundry where damp clothes are hanging round, if not in so large a quantity as to produce over-dampness. The objection to stoves and hot-air furnaces has no doubt resulted from the absence of sufficient moisture-applying apparatus. Stove rooms that are not properly ventilated are ruinous to growing plants. The whole atmosphere in the conservatories of florists is always kept so moist that a person, when entering, observes the dampness. Yet such an atmosphere is congenial to tender plants.

Most growing plants become sickly and "drawn up" in the parlors of our first-class houses, while in those of less pretensions we frequently see them vigorous and flourishing. In houses without "modern improvements" the air is not heated until its capacity for moisture is such as to greedily take it from the plants, as well as from the persons who dwell there, nor are the windows sealed so tightly that the plants can not have a breath of fresh air from without. If people will make a climate in their houses like that of a desert, they must content themselves with such plants as are naturally adapted to arid regions. Cactuses, Crassulas, Sedums, and such thick-skinned plants will endure an amount of roasting and drying which would kill a Camellia or a Rose, though even they must have a certain proportion of life-laden oxygen.

Supposing the plants to be well established in good soil, the three points to be attended to are air, water and cleanliness. Every day when the weather is not too cold, the window sash should be let down at the top, and on mild days kept open during the warmer part of the day. In the first place, cleanliness is to be observed with the pots. If they have become covered with green film, they are to be set in a pail of water and soaked a while, and the green matter washed off with a cloth or scrubbing-brush. The inside of the pot should be clean down to the earth, and the surface of the soil free from moss and fallen leaves.

As to the plants themselves, the two great troubles are dust and insects. A paper or light muslin screen laid over them while the room is being swept, will keep off a great deal of dust, but even this will not obviate the necessity for washing and syringing. Broad and smooth-leaved plants may be washed with a soft sponge, or, what is better, placing the hand over the earth, turn the plant upside down and move it briskly about for a few seconds in a vessel of water. Then set the plant upright, wash each leaf between the finger and thumb, and afterward give it another rinsing. A plant too large to be treated in this way may be syringed, or lay it down and let water fall upon it from a considerable height from a watering-pot. This can be done out of doors in mild weather, and in cold weather in a sink or bathing-tub. If plants are frequently washed they will be but little troubled by insects.—*Exchange.*

PLANT OLIVE-TREES.

There is an entire freedom from risk in planting Olive-trees in the southern part of our State, for there they have grown luxuriantly and borne fruit abundantly for nearly a hundred years. The fine Olives of the church gardens in San Luis Obispo have yielded fruit since 1782. The olive-orchards of San Diego, San Fernando, San Buenaventura, and Santa Barbara have all flourished and given forth their exquisite berries for nearly the same length of time. Thus it will be seen that there is no experimental risk in trying to grow Olive-trees almost anywhere in southern California; and we have seen them doing nicely on the foot-hills of Monterey, Santa Cruz, Santa Clara, Alameda, Contra Costa, Tuolumne, Calaveras, and Amador counties, and believe that they will succeed well in forty counties in our State, at a certain height on the hills, so as to come within what is termed the warm belt. It is a tree that can be easily raised in this climate, requiring but little or no irrigation, and, when once it has taken root, will grow with about as little care as any of the ornamental sorts of trees planted on this coast. And there are but few trees more beautiful to the eye than the olive after it commences bearing. Its oblong, lance-shaped leaves, with their deep green shade on top and light feathery color underneath, when disturbed by the gentle winds produce a peculiar and pleasing effect. The tree grows to the height of from thirty to forty feet, and its branches spread laterally in every direction, with an erect, jaunty form, making a very inviting shade-tree for roadways and dwellings accompanied with the substantial advantage of bearing fruit that will pay for the cultivation.—*Pacific Grocer.*

The Pecan Tree.—The Grass Valley *Union* says: "Several of our contemporaries are discussing the subject of planting trees, and with all of them the nut-bearing trees seem to be most in favor. The nut-bearing tree furnishes an article of food always, and the wood of any nut-bearer is valuable as timber. Not one of the nut-bearing trees has wood which is not useful. But we have seen no mention of the Pecan-tree. The nuts are sold in every candy and variety store in the State, and the nut is popular everywhere. The tree is one of the finest shade-trees that grows. It will grow on any alluvial land. As timber, the Pecan is next to the Hickory in strength and far superior to the Hickory in lightness. The wood of the Pecan-tree makes finer pick-handles, axe-handles, whipstocks and that sort of thing than any other tree. In planting, the Pecan-nuts should be obtained from the western part of Texas. There the fruit of the tree is much larger than any along the banks of the Mississippi."

Variegated Flowers.—A really pretty effect can be produced on any colored flower, Peony, Rose, Fuchsia, etc., etc., making them beautifully variegated, by holding the flower in the hollow of the inverted hands, and lighting a match underneath it, being careful not let the flower get close enough to be scorched. It is the fume of the brimstone that does it, and the effect is sometimes so startling as to deceive a botanist into thinking he has discovered a new variety. To make a very pretty medley picture, cut flowers and sprays of buds and leaves from the colored plates in catalogues, and gum them tastily on white or delicately tinted card-board, in the form of a wreath or bouquet. A rustic frame makes a very satisfactory picture of it.—*Floral Cabinet.*

THE BULB SEASON.

BY F. A. MILLER.

[CONTINUED.]

The bulbs heretofore spoken off are generally known as the Dutch, or Holland Bulbs, because they are almost exclusively grown and sent out from that country all over the globe, the climate and soil of Holland being admirably adapted to the purpose. No other country can equal the "Dutch" in the cultivation of these bulbs. However, the so-called Dutch Bulbs form only a very small proportion of the bulbous-rooted plants, which are now under cultivation in and out of doors; and it is a most remarkable fact that bulb culture is beginning to form a very important feature in floriculture everywhere. In this country the progress in this direction has been somewhat slow; nevertheless we find a continually growing demand for bulbs. No doubt they are a beautiful and interesting class of plants, and no sooner will their cultivation and management be better and more generally understood than their desirability will be acknowledged by all who take any interest in plants. We shall also find that many kinds of bulbs are particularly well adapted to our mild climate, and their cultivation will be much less laborious and disappointing than in the Eastern States. There are undoubtedly some bulbs which will not thrive as well as others, but from my experience so far I am hardly prepared to point out any particular kind that has proved an entire failure. Bulbs, like all other plants, require rest; some must have their season of rest during our wet winters, others must rest during our dry summers. There are some which we may call Evergreen; that is to say, their foliage is persistent, and these we may keep in a constant growing condition, yet a season of comparative rest will be beneficial to them.

The time is now at hand when we may plant Lily bulbs. The Lilies are certainly most beautiful objects and can not fail to please. The effect produced by a group of Lilies in the garden when in bloom can not be equaled by any other class of plants, and as pot-plants in the conservatory, if well grown, they have no superior for contrast, effect, or beauty. The number of different species and varieties is large. Upward of forty-six species are described, and many of these comprise a large number of varieties. In the more extensive catalogues of Europe we find over one hundred varieties enumerated. In our own State we find a number of varieties growing wild, and although somewhat difficult to cultivate, we should not lose sight of them. Some judicious experimenting may lead to success. They are certainly entitled to as much consideration as any other variety of Lily.

Lilium Humboldtii, although known for many years as the California Tiger Lily, was only a few years ago brought to more particular notice by Mr. Roezl. It is found in open situations, 2,000 to 3,000 feet above the level of the sea, growing in a yellow gravelly clay, sometimes sandy clay, of a porous nature, exposed to a hot sun. This Lily is easily grown, and bulbs which I have cultivated for four years are producing every season finer spikes of flowers than I have ever witnessed in their native soil. Last season I had spikes seven feet high, on which I counted twenty-nine flowers and buds, all of which came to perfection. The flowers are of orange red color, with numerous dark brown or claret tinted dots, the dots being more numerous and larger toward the centre of the flower. The petals are reflexed,

and give the flower a graceful appearance. Certainly I can recommend this Lily for general cultivation. If cultivated in pots, I found it to do best if planted high, so that a portion of the scales is visible. The best adapted soil is a coarse gravelly loam, and good drainage should be provided. This Lily is also called, incorrectly, *Lilium Bloomerianum*.

Lilium pardalinum, another Californian Lily, found in various parts of the State, growing in moist places, shaded as well as exposed. I have found it 5,000 feet above the level of the sea in mountain meadows, where night frosts occur in June and September. There its roots form a compact mass or sod, the flower stems running up five or six feet high, bearing from eight to twelve graceful flowers, bright orange toward the centre and brilliant red at the end of the petals, which are well recurved. It is one of our prettiest Californian Lilies, easily cultivated if well supplied with moisture and if grown in heavy turfy loam. Its pleasing form will make it very desirable.

[TO BE CONTINUED.]

HOW TO MAKE A VEGETABLE GARDEN.

There has grown in this State a very general impression that none but river bottom lands are fit for vegetable gardens. This impression has taken so strong a hold of the minds of farmers on the higher shelf lands, usually denominated grain lands, that very few of these farmers even think of raising their own vegetables, but content themselves with buying stale articles from the wagons that go about the country retailing vegetables that have been taken from the market gardens, sold to dealers in town, then to the peddler, and finally to the farmer, who in order to keep a supply on hand must purchase enough to last him from one trip of the peddler to the next, generally a week. Now, in the first place, we will state that the rich river bottoms are the best soil we have for the production of vegetables, but while we acknowledge this we also claim that all our good grain lands in every part of the State are also as good for making successful gardens on as the same style of lands in any other State—as good as are the hilly or rolling sections of the Eastern or Middle States, or the prairie lands of the States further west. In these States, as well as here, the rich bottom lands of the creeks and rivers are the best adapted to vegetables, and will raise larger and more to the acre than the rolling lands, but on this account do the farmers of the latter abandon the idea of cultivating vegetables for their own tables and depend on buying them from peddlers? Should they adopt this plan very few of them would be able to make both ends meet one year with another, and, in fact, very few of them would be able to retain their title to their farms in themselves for any length of time.

The position of our grain farmers who have adopted this plan is by no means secure, and we assure them they will find it out some day, though too late for many of them. We urge this matter at this time, because, as we have before said, this is the time of year to make a garden and begin the planting of seeds for the vegetables to supply the table the coming year.

As very many of our farmers, whose lessons in agriculture have been taken in this State exclusively, and whose practical knowledge consists in the ability to manage four or six mules or horses on a gang plow, or before a double drag or harrow, and run a header and steam

thrashing-machine, will feel awkard in a little inclosure of an acre of ground, making beds for radishes, beets, and carrots, and planting the seeds and taking care of them after planting, we will endeavor to give them a few practical hints in this direction. Having selected the spot of land for a garden near the house containing as much light loam soil as possible, plow and subsoil it or trench it with the shovel and spade to the depth of eighteen or twenty inches, trying to keep the top dirt on the surface as much as possible. Then, if the soil be composed of so much of clay or adobe as to cause it to be sticky in wet weather, or to bake on the surface after a shower, it will pay to draw from the nearest creek bed, or from some sand or loam deposit nearer by, light sand or loam enough to cover the surface to the depth of from four to six inches. To this add three inches of the best rotted stable manure to be obtained from your own or your neighbor's barn. Having thus evenly spread these on the surface, put on the harrow and thoroughly mix them. Then with the two-horse plow, set to go say eight inches deep, plow and cross plow until the whole soil to that depth shall be thoroughly mixed and pulverized. At the end of this operation, and at very little expense other than the utilization of time that not so used would be wasted, the farmer on the stiffest adobe wheat land will have a garden spot equal, if not superior, to the best of our river or creek bottoms. The garden soil so prepared, and thoroughly cultivated each year, with yearly additions of well rotted manure, will require but little artificial irrigation, and can be readily supplied by pump and windmill from the house that furnishes water for domestic purposes. Right here we would suggest that underground irrigation is the best and cheapest for the garden. It will cost something to prepare for the distribution of the water under ground in the first instance, but in the long run money will be saved by adopting this plan. Two redwood two by three scantling, grooved out on one side, an inch deep and an inch wide, and the grooved side turned together so as to form an opening for the water to run through, one by two inches square, laid say eighteen inches deep and twelve or fifteen feet apart one way across the plat, and these connected with a tank at the well, will form the means of a perfect, cheap and durable system of irrigation. Of course there must be apertures at frequent intervals, say once in two feet, along this tube, to let the water out. Water judiciously distributed through this system of underground tubes will give the garden plat so prepared the power of perpetual production. It will, in fact, convert winter and summer and autumn, so far as the limits of the garden are concerned, into perpetual tropical spring, in which vegetables of all kinds may be kept constantly ready for the table from one year's end to the next.

Confirmation of this statement, of a character convincing to all who may feel an interest in the subject, may be readily found in the perpetual green in the Chinese gardens in the suburbs of every town and hamlet in the State. These gardens have the advantage of constant irrigation during the day summer and winter, but the underground irrigation proposed would be as much superior to the surface irrigation of the Chinese as their plan is superior to no irrigation at all. While the one will draws the roots of all vegetation deep down in the soil, and consequently give them a firm hold of life, and induces an even growth, the other keeps

the roots near the surface, subject to the slightest change in the weather, and liable to uneven and unhealthy growth. We have no reservation in the opinion that a garden on the uplands in any part of the State, prepared and irrigated as we have suggested, and well attended, will be superior to any ever yet cultivated on the richest bottom lands in the most favored locality, and will attest their superiority upon actual experiment.

The fence around the garden should be high and tight, first, to keep out all poultry, etc., and second, to screen the contents from the effects of the cold south winds in the winter, and dry north winds in the summer. These fences will answer also for the special protection of vines and small fruit-bushes that may be trained against them. Along the line of the south and east fences plant your Currant and Gooseberry bushes, as well as red Raspberry plants, and the shade of the fence will furnish the protection from the direct rays of the sun in the warm parts of the day so necessary to the successful cultivation of these fruits in our dry climate.

On the north and east sides make your hot beds and cold frames for the earliest vegetables, and plant your Blackberries and Orange, Lime, and Lemon-trees, and such semi-tropical plants as you may wish to cultivate in the garden. Let also your beds for winter vegetables be made in this end of the garden under the protection of the northern fence, and exposed to a southern view. Here plant your early Peas, early Potatoes, early Beets, Turnips and Onions, Corn, Beans, etc., while the southern part of the garden may be reserved for later planting of these same kinds of vegetables.—*Sacramento Record-Union.*

DECIDUOUS TREES AND SHRUBS.

A judicious selection of trees and shrubs is needful if we desire to make our surroundings a joy to the eye; and as this is the best season to plant them, a few directions concerning them may not come amiss to our readers. There are few trees and shrubs that are not objects of beauty and admiration, if they grow luxuriantly and are well trimmed, but the style and contour of them should be such as will harmonize the best with the architectural arrangement of the house. Those which have a symmetrical habit of growth, whether upright or gracefully drooping, are the best adapted to mingle with classical statuary and geometrically laid out flower gardens, and will be in good taste when planted near homes of modern erection; while as the distance from the house increases, the style and habits of the plants may be of a freer or more massive character. Quaint old-fashioned country houses can be embellished and improved if the trees and shrubs are of a more rampant growth, but plants of statelier habits can be grouped together in flower-beds at some little distance from the buildings.

But we should not presume to dictate that plants of decisive, uniform, and symmetrical shape, could not be interspersed with a rambling style of growth, when the houses are not of a decided character, for then a system of mixed planting is often very ornamental and desirable. In planting shrubs, or removing them to other locations, it is not needful to wait until all the leaves have fallen, but they can be planted as late as the middle of December if the ground is not too cold; but when planted two or three weeks earlier, they will often become more firmly rooted, and better able to bear the dry weather of the en-

suing summer. The ground should be well dug over for the reception of the shrubs, and it should also be thoroughly drained, for if it is wet and pasty it will injure the tender fibres of the plants.

Stake and tie up each shrub or tree as soon as planted, so that the wind cannot disturb their roots, and if the season inclines to be severe, mulch the roots with a few inches of stable litter. When buying shrubs and ornamental trees, select young and vigorous plants, rather than those of a larger size and less healthy appearance, for in a year or so they will be in a better condition than the larger ones.

The following is a select list:

Forsythia viridissima is a very showy yellow flowering shrub; blooms early and profusely.

Leycesteria formosa is very curious; its long clusters of white flowers with purple calyxes presenting a handsome appearance.

Pyrus Japonica and *P. spectabilis* are fine; the first has brilliant scarlet flowers, the other a delicate peach-bloom shade. Blooms very early.

Deutzia gracilis is a low growing shrub, covered with white flowers in early summer.

Daphne mezereum, an upright growing shrub, produces an abundance of purple flowers before the leaves appear.

Weigela rosea variegata is a compact growing shrub, deep leaves margined with white.

Spirea Revesii has a drooping habit, is free flowering and pure white.

Spirea callosa alba is a new white flowering variety of dwarf habit.

Hydrangea Japonica is a very handsome shrub from Japan; flowers, a rich rose color.

Hydrangea Empress Eugenie is a new variety from France; flowers a delicate blue and pink.

Deutzia Fortunii, a lovely shrub of two to three feet in height, has white flowers and is perfectly hardy.

Cupressus disticha (deciduous cypress) has a feathery foliage of a delicate pale green, is pyramidal in shape and very ornamental.

Amelanchier botryapium (snowy mespilus) is a very graceful tree, with white flowers.

The double-flowering Cherry—a showy tree of slow growth; is covered early in the spring with a profusion of double white flowers.

Double-flowering Peach has double pink flowers, similar to the Cherry.

Cercis canadensis (Judas-tree) has bright rosy pink flowers, but has an irregular habit.

The Mop-headed Acacia is a very handsome, symmetrical tree, the head forming a perfect globe.

Magnolia purpurea is a large leafed tree, of straggling growth, with purple, tulip-shaped flowers; blooms early in summer.

Salisburia adiantifolia (Gingko, or Maiden-hair tree) is of slow growth, but very handsome and symmetrical; foliage of a light green, resembling the fronds of the Maiden-hair Fern.

Cytisus laburnum (Laburnum) is very graceful in habit, with racemes of showy, yellow, pea-shaped flowers.

THE OLD MAN AND THE YOUNG TREES.—The young man in the beautiful fable of "La Fontaine" ridiculed the man of four-score for planting an avenue of little trees, because he could not hope to live long enough to see them as high as his head. "Well," said he, "and what of that? If their shade afford me no pleasure it may afford pleasure to my children, and even you; and, therefore, the planting of them gives me pleasure."

WINDOW GARDENS.

Just as drapery adds to the grace of a room, and gives it what mirror and picture and artistic furniture can not with all their elaboration of form or color afford, so the vine gives to our window gardens their overshadowing air of protection and comfort, and of brooding persuasiveness — something like the effect in sacred pictures of kindly, hovering wings. Our first thought, then, in ornamenting our windows may well be for the vines, and they reward care more readily, perhaps, than any other house plants. At any rate, their luxuriance is sufficiently sympathetic to give answer, and quickly too, to the tending touch. Shall we choose for ourselves a variety of these overarching and daintily climbing greeneries? First of all, then, is the Ivy, which hardly needs words of praise, since it speaks so frankly for itself. Only for beginners in its culture need advice be offered, and to those not yet beginners, to whom we say: Do not let your house, do not let your sitting-room, at least, be without this unexacting but generous little friend. Ivy is readily grown from cuttings. All we have to do is to cut from the parent plant little branches about three inches in length and immerse them in vials of water, or plant them in shallow boxes filled with sand and wet to the consistency of mud, and kept so fully moistened until the roots have sprouted from the Ivy stems. Ivy already potted out of doors should be brought into the house in November, and by degrees accustomed to the heat of the sitting-room, so as to flourish all winter. You must wash its dusty leaves, and once a week give a tiny stimulant of guano and nip off with sympathetic judgment the terminal shoots, so as to duplicate the upreaching effort of new leaves, and your Ivy will gratefully respond and domesticate itself, and you will ask little of it that it will not perform. Of flowering vines there are a hundred beauties, and selections must be made from the florist's tempting lists with reference to the temperature of our rooms and the exposure of our windows. In windows facing the south, and with rooms of warm temperature, we may have the variegated kinds of the Mexican vine, named after the priest who brought it from the wilds, the *Cobœa scandens*, with its bell-shaped flowers, and the Passion-flower (*Passiflora cerulia* and *Rernusina*), which needs also for profuse blooming such sunlight and temperature of from sixty to seventy-five degrees, and the *Ąssus discolor*, a close dependent upon heat and light. For shadier windows there are the *ipomœa*—the Morning Glories—in many varieties and colors, from sky-blue to scarlet, generous rewarders of care, and so rapid in growth that they will blossom six weeks after the seed is planted, and the Vinca, the charming little *perveche* of the French, with its leaves glossy like myth, and its starry blossoms, lavender-colored and blue. And again, is the temperature too warm for Ivies, one may have for foliage vines the Smilax, an exotic from South Africa, a plant requiring rich sandy soil and plenty of watering, and sometimes, if attacked by its mortal enemy, the red spider, a dusting with cayenne pepper. And for the same conditions of growing there is a new vine, a wonderful Fern, called the Walking Fern, just now appearing in the conservatories—a vine so graceful, so novel, the Smilax has hardly a hope to remain the reigning belle among the festoon plants of the window basket or the winter's beauty in the epergne or the vase. — *New York Mail.*

THE CULTURE OF THE HAZEL-NUT.

"The Register of Rural Affairs for 1876" (an almanac that no well regulated farmer's family should be without) contains an article on the culture of the Filbert. It is a curious fact that this paper, emanating from one of the most intelligent sources of horticultural information, can do no more than give English experience. American experience of any extent seems to be wanting. Downing says he has found the English kinds productive in this climate; but we do not remember to have seen any accounts of their successful Western culture, nor indeed of their being grown to any extent anywhere in the United States.

The Genus *Corylus*, Hazel-nut and Filbert, belongs to the Oak family, and comprises:

C. Avellana, European Hazel-nut or Filbert, which grows, according to Gray, to nearly double the height of the common Hazel-nut. Loudon describes it as a shrub or low tree, a native of Europe, and the east and west of Asia, growing to the height of twenty feet and upward, but commonly found in the character of a bush, as undergrowth in woods, especially of the Oak. He adds that in Eastwell Park, Kent, among Thorns, Crab-trees, and common Maples, they are upward of thirty feet high, with trunks one foot in diameter at the ground.

C. Corluna, Constantinople Hazel, according to Loudon, is a tree fifty or sixty feet high, a native of Turkey and Asia Minor, but hardy in England. Who has known of any experience with it in the United States?

C. Rostrater, beaked Hazel-nut, is found generally in the Northern States, but extends down the Atlantic coast as far south, we believe, as the Carolinas. We do not know that it is found in the North-west. It is lower and stronger than our common Hazel-bush, and has the "hulls" curiously twisted about the nut, whence its name. Two to five feet is all its altitude.

C. Americana or American Hazel-nut is very common in the West, and unlike the other species seems to only thrive permanently in the open ground. It is of a better flavor than the Filbert as received here, and varies enough in size and quality to suggest the desirability of attempting its improvement. We presume some of our readers may have observed somewhat in the same direction, and possibly experimented with them under culture. If so, we should be very glad to hear from them.

It would also be of interest to know whether the Filbert has been propagated on our common Hazel-nut, as a stock, and with what success. The time is not far off when the Hazel-nut must be grown under cultivation, if at all. Civilization and better farming does away with wild Strawberries, Raspberries, and Nuts, and makes it needful that we should grow them.

The monster pumpkin of the world has been raised in this valley. Mr. J. R. Truman brought to the depot last Friday afternoon a pumpkin which weighed two hundred and thirty-three pounds. This monster measures seven feet and a half in circumference and twenty-four and three-quarter inches in diameter. It was raised by Mr. Truman on sandy land and has never had a drop of irrigation. It is intended to prepare this pumpkin for shipment to the Centennial. It can't be beat anywhere, and is only another evidence of the astonishing fertility of the soil of this valley. —*Downey Courier.*

Editorial Portfolio.

OUR FRONTISPIECE.

We have been disappointed in receiving from the East a beautifully colored group of flowers, with which we intended to embellish the HORTICULTURIST this month. In its stead, therefore, we have selected two characteristic engravings of a winter scene in the Eastern States and one in California. The contrast will readily strike every one. While in the East old winter reigns in all his usual rigor and severity at this season, with frost, ice, and snow covering the landscape, here in California our mountains, hills, plains, and valleys are covered with verdure from the late plentiful and mild rains, and many wild plants and flowers are already beginning to bloom; and our many native evergreen Oaks and other native evergreen shrubs and trees, together with the numerous exotic Eucalypti, Acacias and other important vegetation, lend an almost complete summer aspect to the view. We speak of this difference to the rest of the States in the climate of this portion of the Union not in any spirit of boasting, but only with the thankfulness and satisfaction that it is our lot to dwell in such a highly favored climate as we enjoy in this beautiful, mild, and genial Pacific Slope.

THE NEW GOLDEN-TINTED CYPRESS.

In our last number of the HORTICULTURIST we noticed this lately-discovered species of the Cypress family of plants, and stated that we would make further inquiries concerning it. We have ascertained from Mr. John Begg, of Gilroy, that at Centreville, Alameda County, there is a specimen of this beautiful evergreen sixteen feet high, and branching out horizontally thirty or forty feet, growing side by side with the Monterey Cypress, and entirely distinct from the latter, and that it has not yet been botanically described. When the branches become of a certain age and in a bearing state, the edges of the foliage assume a bright yellow color nearly all the season, but especially in July. Mr. Begg raised some seedlings of this very handsome variety two or three years ago, which he has disposed of. In the summer, in their native habitat on one of our southern ranges of mountains, he says they form a lovely scene, similar to a golden-tinted grove of trees, attractive to the eye of the explorer or botanist. No doubt we shall soon hear more concerning this addition to our arboretum from some of our nurserymen and florists.

VICK'S FLOWER AND VEGETABLE GARDEN, AND FLORAL GUIDE FOR 1876.

This zealous, refined in floricultural taste, and enterprising proprietor of one of the famous Rochester nurseries and floral depots, has presented the lovers of flowers, this year, an enlarged and improved number of the "Guide," and given us in it four beautiful new chromo plates, being groups or bouquets of flowers representing the different classes, as a group of Annuals, Perennials, Flowers of Tender Bulbs, and of Hardy Bulbous Flowers, and has named it "Vick's Floral and Vegetable Garden." Mr. Vick has also continued in his "Floral Guide" for this year an entertaining narrative of his late "Trip to the Pacific." The somewhat humorous and graphic account of his visit to the Calaveras Big Trees, the Yosemite Valley, with his description of the Indians there, and of the curious tarantula spider and its trap-door nest, is quite interesting. In speaking of the California Ilex or Holly (*Photinia arbutifolia*)

he says: "This tree, from what we heard and what we know, must be beautiful in the autumn and winter, but we were not in the season to see it in all its glory." This, as is well known, is an evergreen very similar to the English Holly.

It is much used here, as in Europe, for decorating our churches, halls, etc. It grows, as a lady correspondent to Mr. Vick says, on rocky hillsides and on the banks of creeks. It blossoms late in the season; and when winter comes it makes a very showy appearance, with its bright red berries and green leaves. The berries hang on the the bushes until quite late in the spring. They will grow from the seed, and may possibly endure the rigor of the Eastern climate, as they bear a good deal of frost here. The bushes are so loaded with berries they almost break down with their weight. They are a lovely sight. The Indians make great use of the berries for food. Mr. Vick, in his "Floral Guide," has a valuable chapter on Berry-bearing Plants, including the English Holly, Winter Berry (*ilex verticillata*), the Mountain Ash, Berberry, Snow Berry or Snow Drop, the Bitter Sweet, and the Strawberry Shrub or Spindle-woods (*Euonymus latifolius*). There is, also, "Garden Work for Invalids," "Winter Floral Decorations," a chapter on the beautiful Chautauque Lake in New York State, and various other useful and valuable chapters in this splendid and instructive miscellany.

The Weeping Larch.—The European Larch has long been known as one of the most valuable timber and ornamental trees. It is extensively planted on the Western prairies for timber, and will doubtless prove to be of great value to the inhabitants of those regions of country. The variety of the *Larix Europœa*, known as the Weeping Larch, is a most graceful tree, with long, slender, pendulous branches. In autumn the leaves change to a beautiful golden tint, affording a fine contrast with the deep green of the Pines and evergreens belonging to closely allied species. Like the common Larch the weeping variety is a deciduous tree, losing its leaves in winter, but in spring the new foliage assumes a bright, lustrous green, seen in no other tree of its class. As the tree becomes well established, cones appear, and in spring their peculiar violet color adds another charm to this unique and beautiful tree.

To get Rid of the Nest Caterpillar.—These nuisances, whether nest caterpillars or measuring worms, or any other species of caterpillar which huddle together in bunches or nests, may be best got at by either using the Abe Lincoln swinging torch, which works at all angles, and so burning them, or a bunch of rags may be saturated with creosote, lighted, and so scorched to death; or a fowling-piece may be used with less than a thimbleful of powder, which will blow them all to pieces very easily. The gun may be discharged at them by holding it only in one hand. We have destroyed great numbers of them in both these latter ways, when we farmed and gardened in Kentucky.

To Destroy Dodder on Alfalfa.—We have been informed by an experienced party that a good plan to get rid of this pest to Alfalfa is, in the dry season, to build a fire with straw over the spots of the dodder, and it will burn it off and not injure the Alfalfa. It will burn the top of the Alfalfa, but it will grow up again readily. The best time to perform this work is on calm days, that the straw may not be blown away.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

In our last paper on pruning, in our December number, we treated on the subject of general pruning. We will now speak of summer pruning, which is done chiefly with a view to the production of fruitfulness in the tree at that season. At the same time, or during the growing season, much may be done to advantage, both in thinning out and shortening in such parts of the tree as may need these plans of treatment. Various methods are pursued to produce fruitfulness, all of them depending upon the fact that this condition arises from the natural habit of a tree to make its wood-growth freely for a series of years. After it has built up a complicated structure of limbs and branches, with some consequent obstruction to the flow of sap, depending on the woody tissues, and the tortuous course of its circulation, it then appears to have reached its maturity, or its fruit bearing condition. It then ceases to make such free wood-growth, and prepares a set of buds, which develop flowers and fruit. Now, this period of growth and unfruitfulness may continue for a longer or shorter time in different varieties of fruits; and the shortening of this is the great object of summer pruning, and of other methods of producing fruitfulness that may be classed under this second head of the objects of pruning. To appreciate their importance and the mode in which the effect is produced, we must ever bear in mind the two great acts of vegetable life, that of wood-growth or growth by extension, and the wonderful change of this growth into flowers and fruit. These are in some sense antagonistic. The first is essential to the production of timber, to the building of the tree, and should be encouraged to do its work undisturbed up to a certain point, that we may have a substantial frame-work by which our fruits can be supported. The latter, however, is the ultimate desideratum with fruit-growers, and in our impatience to reap a quick reward, we often resort to measures that tend to curtail the usefulness, size, and beauty, as well as the permanence, of our trees. This is an illustration of the axiom, that whatsoever threatens the vitality of a plant tends to make it fruitful; it calls into activity the instinctive effort to perpetuate the species by the production of seed, that may be separated from the parent, and establish a separate and independent existence, to take the place of that the life of which is threatened.

Summer pruning and pinching interferes with the growth by extension, and threatens the very life of the tree; the entire removal of all new shoots and their foliage, and the removal of the successive attempts by the tree at their reproduction, will cause its death in a little while. Their partial abstraction, as practiced in summer pruning and pinching, being an attack of the same kind, results in the formation of fruit-buds. The operations of budding and grafting upon an uncongenial stock, interrupting the circulation by ringing, by ligatures, by hacking, twisting, and bending downward, all tend to check the growth by extension, and are attended by similar results, since they are antagonistic to the mere production of wood. Shortening, in the branches of some species which form their fruit-buds upon the shoots of the current year, has the effect to give them a fuller development if performed during the summer, but if deferred until the following spring, it will have the directly

opposite result, and will cause the production of woody shoots at the expense of the fruit. But we can not spare further space in this number for this subject connected with fruit culture, and will now take up our usual report on our markets.

About the middle of last month (December) Strawberries were coming forward daily, but the supply had for some little time previous become very light. Still we can inform our Eastern friends that those who choose to do so can, no doubt, regale themselves on Strawberries and cream, or Strawberry shortcake, on both Christmas and New Year's Day. They will not be so ripe and delicious as in the fullness of their season, which lasts here from April to September, but, assisted by plenty of cream and sugar and made within a covering of good pastry, they will be apt to suit the palate very well. At any rate, to be able to tell our Eastern brethren that we had Strawberries in any shape of preparation during the holidays will be something to feel proud of. The first new crop of California Oranges arrived from Los Angeles on the 16th ultimo. They were, it is true, too green and sour, but being of good size met with a fair demand. Sugar, too, is a great help for them as well as half-ripe Strawberries. The market was well stocked with Mexican Oranges and Limes, and Californian, Australian, and Mediterranean Lemons. The supply of Bananas was running low, but was replenished by the steamer from Honolulu. Pears became suddenly very scarce, and the best sold as high as $4 per box, wholesale. Apples could be had at $1.50 to $2.50 by the single box. Late Pears seem to have run shorter than usual this year. The Winter Nelis, one of our best Pears, are scarce. Newtown Pippins are very large, juicy, and good this season, and are the best sort in market.

About the middle of December a few Peppers, Lima and String Beans, Cucumbers, and Tomatoes, of poor quality, were all that remained of the long list of summer vegetables. To compensate for the deficiency, the market was abundantly supplied with Mushrooms from the Sacramento and San Joaquin Valleys, and the usual profusion of the regular winter assortment, including Cabbage, Cauliflowers, Celery, Beets, Carrots, Turnips, Radishes, Lettuce, Asparagus, etc. The few Green Peas in market were raised at Warm Springs, Alameda County. Sweet Potatoes were plentiful, but were neglected. Common Potatoes by the sack sold at $1.50 to $2.25 per 100 pounds, delivered. Asparagus retailed at 50c. to 60c.; Lima Beans, 8c. to 10c.; Egg Plant, 8c. to 10c.; Chile Peppers, 11c. to 15c.; Rhubarb, 10c. to 12½c.; Horseradish, 15c. to 20c.; Marrowfat Squash, 2c. to 3c.; Artichokes, 75c. to $1; Brussels Sprouts, 6c. to 8c.; Dried Ochra, 40c. to 50c.; Garlic, 12c. to 15c. per lb.; Mushrooms, 15c. for the wild, and 25c. per lb. for the cultivated variety.

California Raisins show to great advantage this year in the markets, being most of them of superior quality, and nearly, if not quite equal to the best imported ones. They are put up in nice boxes in much the same way as the foreign fruit. This is likely to become an important interest here, and to rank highly with other undertakings of the same kind, for which our soil and climate are so very favorable.

On Christmas Day the fruit stalls presented the following collection of fruits: California-grown Apples, Pears, Pomegranates, Strawberries; seven varieties of Grapes—Mission, White and Flame Tokay, Muscat, White Malaga,

Black Morocco, Black Arabian, and Verdelho; Oranges, Lemons, Limes, and Medlars. Eastern-grown Cranberries; foreign-grown Oranges, Lemons, Limes, Bananas, Pine-apples, Cocoanuts, and Persimmons. Then there was, also, a long list of vegetables grown only about four miles from the heart of the city.

Strawberries held out remarkably well, and still came forward daily, though in diminished quantities. The markets were abundantly supplied with many tropical fruits—Oranges, Lemons, and Limes from Mexico—Bananas from the Hawaiian Islands; Pine-apples and Bananas from Panama, and Lemons from the Mediterranean and Australia. California Oranges promise to be of excellent quality this season, but are yet unripe and too sour to meet with ready sale. The Mexican variety has the preference at present. Some choice showy Lady Apples, largely used for decorating Christmas trees, were offered at 12½ and 15 cents. Other varieties of Apples, by the box, sold about Christmas-time at $1.50 to $2.75. We copy the following interesting article from the *Evening Bulletin:*

"A gentleman residing in this city, who is interested in its horticultural progress, has just received a few specimens of the Navel, Bahia or Seedless Orange, from a Florida correspondent. Some of them measure thirteen inches in circumference. They were grown by W. M. Newbold, of Putnam County, Florida; and although they have been eleven days on the way, passing in the meantime through the icy zone of the Rocky Mountains and the Sierra, they arrived here in excellent condition. The Navel Orange is a superior variety of fruit. It was originated at Bahia, Brazil, from which place it takes one of its names. The tree is without thorns and the fruit without seeds. Its introduction into the United States is of recent date. The variety has been introduced to this State from Florida and from Australia. In the latter country it is grown extensively."

The vegetable stalls exhibited Green Peas, String Beans, Cucumbers, and Tomatoes in considerable quantities, in addition to the ordinary winter varieties. Asparagus and Rhubarb were to be had at the old prices, but vegetables generally were higher. Choice Potatoes were scarce, though the market was overstocked with inferior kinds. Good to choice sold by the single sack at $2 to 2.25 per 100 lbs.

During Christmas week a large and profitable business was done in fruit and vegetables as well as in other things. About the last of December the vegetable stalls were comparatively very sparingly supplied with summer varieties. Lima Beans had disappeared, and String Beans and Green Peas were very scarce. A few Cucumbers and Tomatoes could still be obtained, but the quality was very poor, and the supply soon gave out.

No Strawberries had been received for several days, and it is probable that the frosty nights we have had put an end to the supply until spring. California Apples and Pears were very scarce, but the market was well stocked by liberal shipments from Oregon. Very choice Italian Chestnuts were offered at the Pacific Fruit Market at 50c.; Pine Nuts 25c. per lb. Apples, by the single box, sold at $1.50 to $2.50, delivered.

Beautiful Groups of Flowers in Water Colors, and Carving in Wood. —At Winter's picture establishment, on Kearny Street, we had the pleasure of examining several water-color paintings by Miss O. E. Whitney, of New

York, and E. R. Campbell, of the same city. They are all, by both these eminent artists, in the highest style, coloring and drawing of this most pleasing department of art. Many of our garden as well as a few of our Eastern and Western wild-flowers are most delicately and at the same time boldly depicted. The carving and truly natural coloring of the splendid English pheasant, by A. Pope, suspended in front of a handsomely painted grained panel work, is calculated to deceive anyone in supposing it to be the bird itself handsomely and skillfully stuffed by the the best taxidermist.

Something about a Name.—A correspondent asks for information about the *pilogyna suavis*. We have never heard of a plant under that name, and confess our inability to give the required information. It is, perhaps, a mistake on the part of our correspondent.

Editorial Gleanings.

The Orange and Lemon in Martinez.—Although the fact is well known that Oranges, Lemons, and other fruits formerly supposed to require a tropical climate for their growth, have been successfully cultivated in this vicinity, there is a wide-spread idea that so much care is demanded, so much shelter necessary, and so many indispensable conditions to be observed, that it is practically useless for any one to indulge in the undertaking who is not well posted in all the requisite and multifarious details. A ramble through the pleasant grounds of the Messrs. Fish Brothers, in this place, recently, gave us an opportunity to notice the imaginary character of these supposed difficulties. Here are Orange and Lemon-trees, of several varieties, of luxuriant growth, in full bearing, with no extra shelter, and receiving about the same amount of care that is bestowed on the other trees in the orchard. The localities bordering on the bay are exempt from the heavy frosts that have proved so destructive in the interior valleys, and no danger from that source is to be apprehended. Here are also the Palm, the Olive, and the Pine-apple, and and all apparently in healthy and vigorous growth. If all can not indulge in the wealth of floral beauty that surrounds the residence of the Messrs. Fish, we hope the time is not far distant when the beautiful foliage of the Orange and Lemon will adorn the premises of every householder who desires to make home attractive, and the golden fruit fill the air with its delicious fragrance.—*Contra Costa Gazette.*

Potency of Sunshine.—From an acorn weighing a few grains, a tree will grow for 100 years or more, not only throwing off many pounds of leaves every year, but itself weighing several tons. If an Orange-twig is put in a large box of earth, and that earth is weighed when the twig becomes a tree, bearing luscious fruit, there will be very nearly the same amount of earth. From careful experiments made by different scientific men, it is an ascertained fact, that a very large part of the growth of a tree is derived from the sun, from the air, and from water, and very little from the earth; and notably, all vegetation becomes sickly, unless it is freely exposed to sunshine. Wood and coal are but condensed sunshine, which contain three important elements, equally essential to both vegetable and animal life—magnesia, lime and iron. It is the iron in the blood which gives it its sparkling red color and its strength; it is the lime in the bones which gives

them the durability necessary to bodily vigor, while the magnesia is as important to many of the tissues. Thus it is that the more persons are out of doors, the more healthy, the more vigorous, they are, and the longer will they live. Every human being ought to have an hour or two of sunshine in winter, and in the early forenoon in summer.

Action of Plants on Impure Water.—At a recent meeting of the Societè Centrale d'Horticulture de France, Jeannel related the following experiments with water containing putrid matter:—In the month of May, sixty grammes of water which had been used for steeping haricots until it had become offensive, and which the microscope showed to be full of *bacteria*—small animalculæ, supposed to be the ordinary agents of putrifaction—was placed in a glass, and the root of a young growing plant plunged therein. An equal quantity of the same water was placed beside it in a test glass at the same time, without a root. The water in the second glass remained infected; that containing the living root, on the contrary, was pure at the end of the fourth day; all the *bacteria* had disappeared, and had been replaced by large infusorial animalculæ of kinds found only in potable water. Water containing putrid meat was treated in the same way, with the same results. It was found that it was only necessary to immerse the root of a living plant therein for five days, to remove all the ill odor and render the water pure and sweet.

The Good Influence of Flowers.—A parlor without a blossom in it in the summer-time is apt to have a desert aspect, a want of life and cheer. For wherever flowers are seen in one, there is always as much sense of companionship as if the little flower-people themselves came visibly with the flowers to inhabit the house.

And perhaps in a way they do. For certainly the delicate spirits of grace, of gentleness, of taste, and beauty are everywhere indicated where a dish of flowers fills a table, where a vine adorns a bracket, where a Rose blossoms in a vase, with a mirror repeating and refining it in fresh loveliness. We know when we see these attempts at simple decoration, be they ever so slight, that there is some one in the house to whom color and contour and fragrance appeal; some one who loves nature as much as upholstery, some one who makes an effort after the ideal, the love of flowers seeming so often to accompany the finer traits, the sweetness and quiet and pleasant habits that make a home as happy as the flowers make it beautiful.

That they do make home beautiful no one will dispute, and a choice between a room furnished in the simplest straw and chintz, with plenty of fresh flowers and vines about it, and a room gorgeous with gilding and velvet and without a blossom, is for the most of us, something like a choice between a house of light and one of lonely dreariness.

Ornamentation with Autumn Leaves.—A very pretty way to ornament any plain article of furniture, a cabinet or paneled trinket, cupboard, boxes, jars, trays, etc., is by the following simple process: Having collected the ferns and leaves in all their endless variety, prepare them thus: Lay the leaves one by one on a piece of soft paper, wrong side up, and with a sharp penknife pare off the projecting veins, so that there will be as little roughness as possible, then place them in books, with a heavy weight, and press them smoothly, leav-

ing them there until you are ready to use them. Prepare the article by painting it black, using a fine brush for the purpose, because it will leave fewer traces. When this is perfectly dry and hard, give it a coat of fine transparent varnish, and before it has become entirely dry, lay on the leaves and fern sprays in graceful groups, according to fancy, pressing them smoothly down, so that every part will adhere. When they are entirely dry, give it another coat of the same transparent varnish, going over the whole surface, leaves and all. If you wish to bronze the black ground in imitation of the Japanese lacquer ware, it can be done by sprinkling a little bronze powder over the sticky varnish after putting on the leaves, then rubbing it lightly with a soft rag to burnish it. These ornamentations are both permanent and effective.—*Cabinet Maker.*

Utilizing Pine-leaves.—We have already, in these columns, called attention to the fact that the Austrians had discovered and were making large use of a process for utilizing Pine-leaves, or, "needles." And now, according to the *Scientific American*, the industry bids fair to be put in the way of a practical trial in this country, by Mr. Chas. Fulton, of New York. The coherent parts of these acicular leaves are dissolved and removed by boiling in suitable chemicals. The result is a substance resembling cotton, or perhaps more nearly wool, of a dark greenish brown color. It is prepared in four qualities, adapted for stuffing mattresses, pillows, etc., and for weaving. For the latter purpose, the fibres of the material are separated and treated in machines similar to fulling-mills. Other processes follow, which result in the production of an excellent thread, which can be woven alone or mixed with wool, cotton, silk, or other fibres. Cloth of very close and fine texture is exhibited, made of the thread. It is soft and pliable, and resembles a fair quality of flannel. There is an enormous amount of raw material for this manufacture in the country, which now is of no value, and which can be obtained at simply the cost of transportation. By the process above described, it is rendered available both for textile and for paper industries, and hence may form a new and valuable supply.

Japanese Persimmon.—When the attempt was made to establish a Japanese Colony and the cultivation of the tea plant in California, we heard much of the Japanese persimmon, which was praised as a valuable fruit. Many young tea and persimmon plants were set out, but the tea experiments were abandoned, and we heard nothing for years of the Japanese persimmon; but several of the trees, fortunately, fell into the possession of W. W. Hollister, of Santa Barbara, and they have now commenced to bear, producing a fruit shaped like a tomato, three inches in diameter and two inches deep, with five faintly marked lodes, brilliant orange in color, with a skin as smooth and glossy as glass. The appearance and flavor are so fine that when numerous enough to be sold in the market—and they may not be for years—many will be bought for curiosity and ornament. The Virginia persimmon, about which there has been some talk of late, cannot compete with the Japanese species.——The three year-old almond trees at Santa Barbara have this year borne about 3½ pounds each of almonds, on the average, while the two-year-olds yielded about a quarter of a pound. The crop on Col. Hollister's place amounted to 17,000 pounds.—*Alta.*

A Valuable Fibrous Plant.—A French marsh plant, commonly known as the Massette, and comprising three varieties, is found to yield a fibre capable of being utilized in a valuable way for textile purposes. The plant grows in a wild state and very abundantly, in streams of water, ponds, etc., and reaches to a height of some ten feet. Heretofore it has been employed for seating chair bottoms, for thatching, etc., in the same manner as straw. The mode of extracting the fibre from the leaves, after the latter are cut and dried, consists simply in boiling them for several hours in an alkaline solution, and afterward dressing them in a mill or under rollers, the process being then completed by washing. A yellowish paper is made, worth about seven cents per pound. The fibre will also prove useful, it is thought, for fabrics and for cordage, being considered equal to hemp, flax, or jute.

A New Oleaginous Seed.—The Commission of the Permanent Exposition of the French colonies has lately called the attention of Marseilles soap-makers to a new source of oil, found in the seed of the Carapa, which is a tree abounding in immense forests in French Guiana. Twice a year the tree produces an abundant harvest of seed, which at certain times cover the earth to a depth of four or five inches. These immediately subjected to pressure give thirty-five per cent. of their weight in an excellent soap-making or illuminating oil.

Coal Ashes for Pear Trees.—Coal ashes have a wonderfully vitalizing effect upon pear trees, especially those growing in light soil. Our ashes of last winter were used around these trees in liberal quantities, and those thus treated have outgrown anything else in the orchard. Some that were even sickly, and apparently ready to give up their hold on life, have been restored to perfect health by this remedy.—*Peninsular News.*

The annual Vegetable and Flower Seed Catalogue of Gregory, the well-known seedsman of Marblehead, Mass., is advertised in our columns. We can indorse Mr. Gregory as both honest and reliable. The bare statement of the fact that he grows so large a number of the varieties of seed he sells will be appreciated by market gardeners, and by all others who want to have their seeds both fresh and true.

METEOROLOGICAL RECORD,

For the Month ending December 31, 1875.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.19 in.
do	12 M.	30.19
do	3 P. M.	30.18
do	6 P. M.	30.18
Highest point on 31st, at 9 A. M.		30.32
Lowest point on the 28th, at 3 and 6 P. M.		29.90

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		50°
do	12 M.	53°
do	3 P. M.	54°
do	6 P. M.	50°
Highest point on 1st, at 12 M. and 3 P. M.		64°
Lowest point on the 18th at 9 A. M.		41°

SELF-REGISTERING THERMOMETER.

Mean height during the night	44°
Highest point at sunrise on the 1st	56°
Lowest point at sunrise on the 18th and 19th	38°

WINDS.

North and north-east on 17 days; north-west on 4 days; south-east on 5 days; south-west on 5 days.

WEATHER.

Clear all day 10 days; cloudy all day 10 days; variable on 11 days.

RAIN GAUGE.	Inches.
1st	0.19
3d	0.46
18th	0.06
19th	0.25
24th	0.53
25th	0.08
26th	2.10
27th	0.06
28th	1.22
31st	0.13
Total	3.08
Previously reported	6.95
Total for the season	10.03

Weigelia Rosea. Moss Rose. Persian Yellow Rose.

Engraved on Wood, and printed in Colors by GEO. FRAUENBERGER, *Rochester, N.Y.*

THE

California Horticulturist

AND FLORAL MAGAZINE.

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A SEVERE WINTER SEASON.

BY F. A. MILLER.

Our mild and pleasant winter months have become proverbial at home and abroad, and although flowers in the month of January are usually scarce, one can always manage to make up a bouquet from the garden. For five years past frosts have become more severe from year to year, and certain plants have suffered most severely in and out of doors, while others were killed outright. The present season, however, is perhaps the coldest we have experienced since the country was settled. It is not my object here to speculate on the probable causes of these atmospheric changes, which, in all probability, may be traced back partly to the destruction of our forests, or to the march of civilization and its unavoidable consequences. This is a problem which science must solve. To us gardeners such cold spells as we have experienced within the last four weeks are worthy of particular notice and consideration. While we might feel indifferent to the freezing of Cinerarias and other tender herbaceous plants, and perhaps be a little vexed at the destruction of Heliotropes and Nasturtiums, we can hardly avoid feeling mortified at the loss of such shrubs as *Cestrum aurantiacum*, *Habrothamnus elegans*, *Tecoma capensis*, Plumbago, and others which have been considered perfectly hardy about San Francisco. If this is to be repeated, we may just as well make up our mind that our usual list of "Hardy Shrubs" must be reduced to a much smaller number, or we must use more precaution in their cultivation or protection. While some of our people may feel discouraged in the cultivation of plants in their gardens, which are not thoroughly hardy, I would suggest that a proper mode of cultivation would greatly lessen the chances of losing certain plants by such frosts as we have had lately. I have frequently observed that the growing of plants is forced to such an extent by over watering throughout the summer season and late into the autumn, that a large amount of young and weak shoots are produced, unable to withstand a moderate frost, nor is the plant itself in condition to hold out. To this is added the unfortunate practice of fall pruning, which in this climate has the effect of producing new and tender shoots al-

most instantly, which are certainly not capable of enduring heavy frost. In speaking of over watering plants in the garden, I should also add that such practice is most dangerous for the soil itself, which must become sour and poisonous to plant life. In a number of cases where my attention has been called to sickness of Roses and other plants, I found that the roots were decayed from the very effect of over watering, and the soil was alive with slugs and worms, which are always encouraged by a superabundance of moisture. When this excessive watering has been resorted to for five, ten, or fifteen years, without provision for drainage or a thorough replenishment of the soil, what can be expected of plants subject to such conditions? If growth is produced, it can not be of a healthy nature, and unhealthy growth is easier affected by frost, than sound wood, and far less liable to injury if the wood is allowed to harden.

But heavy frosts also tell heavily on tender plants cultivated under glass, and our practice to do without artificial heat can not be relied upon any more with safety. We may keep some of the more hardy greenhouse plants *alive* during our winter months without fire-heat, but we can not expect them to grow luxuriantly and flower well without the aid of artificial heat. When the thermometer falls to thirty-six degrees, as it did several times during last January under glass, Camellias and Azaleas will not suffer, but such as Begonias, Bouvardias, Primroses, and nearly all soft-wooded plants will receive a serious check, if not a detrimental blow. Cut flowers are now so scarce that not one-half of the demand can be supplied, and the flowers offered are of very inferior quality. No city, perhaps, of equal size can boast of as many little greenhouses and conservatories as can San Francisco and its surroundings, in which plants of delicate nature are cultivated, and to many of these amateurs the construction of a heating apparatus and the consumption of fuel will be a great burden, yet we can not deny the fact that it will be very difficult, yes, almost impossible, to nurse the more tender plants through frosty weather. In this case I would also strongly urge to keep plants dry during winter, and give air whenever the weather permits, in order to harden the plants, and to make them less liable to injury from cold or extremely wet weather. It is a wrong practice to shift small plants into large pots during autumn or winter, when the roots are inactive. Watering such plants in winter is almost death to them. The water in use here is not of the best quality for plants, containing impurities detrimental to plant life. Boiled water used in a warm state will be very beneficial to plants, particularly during winter.

FISH LIFE AND GROWTH — NATURAL SCENERY IN ANGLING A HELP TO THE LOVE OF HORTICULTURE.

BY E. J. HOOPER.

The reason that we have given several times for introducing the subject of angling in a magazine of horticulture is, that there is spread around the fisherman, generally, in his piscatorial excursions, that most delightful and interesting book of nature, in trees, shrubs, and flowers, that he can not fail to take great pleasure in perusing, and by so doing he is apt to become a naturalist, if not actually a horticulturist. In our mild and genial California climate we can fish, at any rate in our ocean and bays, all the year round. Still, although we are not, like the

Eastern portion of the States, sealed up in winter by snow and ice, we have just sufficient of cold, and sometimes long rainy weather too, to be pleased when the spring puts forth, even here, its sweet vernal power, and the yellow-colored and turbid streams slacken their volume of water, the buds on the trees swell and the leaves burst forth, the flowers grow into bloom almost as we look upon them, the birds utter their charming notes, the sportive lambs and the timid hares play, and mark the changes which even the comparatively almost uniform climate of this coast assumes. But we must now pay attention to our caption—"Fish Life and Growth" —upon which we intended to treat. The creatures forming this department in natural history are not only highly important as furnishing us material for wholesome food, but also for the promotion of exercise and health in a rational and pleasing recreation in their capture. Some remarks, therefore, concerning this fourth class of vertebrate animals may be here not unacceptable to many of our readers. We are all sensible how beautiful fish are as regards form and color. There are comparatively few persons notwithstanding, who have an opportunity of seeing them at the moment of their greatest brilliancy—namely, just when they are brought out of the water. We allude more particularly to some of our sea-fish — as the herring, mackerel, salmon, etc. What, for instance, can surpass the silvery brightness and dorsal shades of green and blue which appear in the specimens of the grilse or young salmon—some call them (erroroneously, we think) salmon-trout—which are now being daily taken by anglers on the Oakland long wharf. The form, too, of these fish is as perfect and graceful, if not more so, than can be found in any inhabitants of the water. The moment a fish is taken from its own element its form alters and its delicate hues fade; and, also, in different localities fish have, like the chameleon, different colors, so that it will almost defy the greatest artist—even our Brookes—to paint these fish so accurately as to catch the rapidly-fleeting tints of the animal. What a wondrous pantomimic mixture of glancing of silver, and blue, and green, blended into one great burning glow of harmonious color, lighted into brilliant life by the sun, do these same young salmon (by some called silver trout or salmon) of the Oakland wharf point, present to the enraptured eyes of their captors! The motion of most fish is excessively rapid—especially the salmon tribe; they can dash along in the water with lightning-like velocity; perhaps the seal can alone surpass them in this respect, which makes them such formidable enemies even to the swift salmon. A fish when in the water has very little weight to support, as its specific gravity is about the same as that of the water in which it lives, and the bodies of these animals are so flexible as to aid them in all their movements, while the various fins assist either in balancing the body or in helping it to progress. Fish of all kinds are evidently admirably adapted to their mode of life and the place where they live, as, for example, in a cave—the Mammoth Cave in Kentucky, where light has never entered—there have been found fish without eyes. Fish are considered, by the best judges in science, to be nearly insensible to pain, and are cold-blooded, their blood being only two degrees warmer than the element in which they swim. It is, likewise, worthy of being noted that fish have small brains in comparison to the size of their bodies. So far as

the personal knowledge of many close observers goes, it is believed that the senses of sight and hearing are well developed in most fish, as also those of smell and taste, particularly the sense of smell, which chiefly guides them to their food. We may, indeed, take it for granted that fish have a very keen sense of smell—more so than most other animals; and thus it is that strong-smelling baits are so successful in fishing. Salmon-roe, which has a strong scent, is a deadly bait in most waters, but fishing with salmon-roe in the East and in Europe is now illegal, and it ought to be so here. It has been said by some naturalists that fish do not hear well, but that assertion is contrary to the experience of many practical men, for pet fish have been summoned by means of a bell, and trout have been whistled to their food like dogs. Water is an excellent conductor of sound; it conveys a noise of any kind to a greater distance, and at nearly as great a speed as air. We are of opinion that the great noise and vibration of the trains on Oakland wharf has some effect on the salmon near by, so as partially to frighten them off during the time while the cars are running, but probably the fish soon return to their haunts. Most fish — especially the game fish—are voracious feeders, and prey upon each other without the slightest ceremony; and one of the greatest difficulties of the angler is experienced after the fish have had a good feed of young fishes or what not, when even the most practiced artist with his most seductive bait will not induce them to nibble, far less to bite. How often do we seem to experience this in our bay, many disappointed fishermen can readily and painfully aver. Many of our fish—as the salmon—have a digestion so rapid as only to be comparable to the action of fire, and in good feeding grounds — the ocean, for instance—the growth of a fish usually corresponds to its powers of eating.

There are many facts of fish life that have yet to be ascertained. Beyond a knowledge of mere generalities, the animal kingdom of the sea is almost a sealed book. The salmon is the one particular fish that has as yet been compelled to render up to those inquiring the secret of its birth and the ratio of its growth. We have imprisoned this valuable fish in artificial ponds, and by robbing it of its eggs have noted when the young ones were born and how they grow. In consequence of its migratory instinct, we have access to it at those seasons of its life when to observe its habits is the certain road to information. Among many controversies concerning it are the kind of food it eats, how long it remains in the salt water, and whether it makes one or two voyages to the sea per annum. There has also been a grilse controversy as well as a rate of growth dispute. A most remarkable fact in the history of the grilse or young salmon is, that we kill them in thousands before they have an opportunity of perpetuating their kind. With regard to their growth in Scotland grilses, about four pounds weight, that had spawned, were marked with copper wire rings in their fins to ascertain the rate of their growth in salt water. After their journey to sea and back again it was found that the four-pound grilses had grown into beautiful salmon, varying from nine to fourteen pounds. This was repeated for several years, and, on the whole, the results were found the same. The majority returned in about eight weeks, and they invariably returned salmon. Food is not often found in the stomachs of salmon. But in some few cases, when fish caught on

Oakland wharf were opened, young fish and shrimps were found, some in a partly digested, and others in a wholly undigested state. The rapid growth of the salmon (some say that it grows at sea a pound in six weeks, at least) seems to imply that its digestion must be rapid, and accounts, perhaps, for food being so seldom found in its stomach. Salmon attain to a very large size on this coast. It is quite possible that our salmon on this slope make two voyages in each year to the sea; but sometimes, although it can swim with great rapidity, it takes many weeks to accomplish its journey, because of the condition of the rivers. If there is not sufficient water to flood the course, the fish have to remain in the various pools till the state of the water admits of their proceeding on their journey either to or from the ocean. Millions of fish, however, are lost before they get to the sea in our rivers. One thing is certain, that salmon can exist perfectly well, with the exception of growing so large, in fresh water. This has been tested satisfactorily in Lakes Merced and San Andreas. Parr, or one-year old fish, are stated by good authority to die when placed in contact with the sea-water. To conclude, why should we not cultivate our waters as we cultivate our land? Our checks, by law, to the annual destruction of salmon and grilse, at certain seasons of the year by netting, are very important and salutary. At any rate, our artificial breeding supplies much the deficiency by any unlawful or lawful slaughter of the innocents. By means of pisciculture the French people have recreated their fisheries. Happily we are commencing now the same most desirable process. Let us by all means clean our rivers by removing impurities and obstacles of all kinds. Let us do our best to prevent poaching. Let us legislate so that there be no more nets among the Chinese, Italian and Spanish fishermen with meshes less than an inch and a half, or wider, if necessary. And, as every little helps, let us destroy in part, at least, the sea-lions, which are so well known to devour tons upon tons of fish, at the mouth of the bay. But we at all events trust that the Committee on the Fisheries appointed by the Legislature will fully perform their duty.

EARTHQUAKES.

BY NATURALIST.

That these vibrations, or *earthquakes*, are in many cases very clearly connected with volcanoes—that they precede, accompany, or follow volcanic eruptions—and that the cessation of ordinary volcanic action is very generally succeeded, as in the neighborhoods of Ætna and Vesuvius, after a longer or shorter interval, by an earthquake, there is no doubt. On the other hand, it is equally certain that earthquakes sometimes originate and are chiefly felt in countries, as in California, where there are no volcanoes, and where all varieties of volcanic rock (though this is not the case here) are absent. They are therefore phenomena that require separate consideration.

An earthquake is the result of a vibration or concussion produced within the earth by some explosive force. It must originate in a comparative small area, and the chief force of the explosion must expend itself in that area. The area disturbed may be one of a series of cavities having great linear extension, or it may be part of a large district of any form, in which are numerous cavities or spaces more or less isolated. The explosion may be single, or

it may be repeated many times. It may be very sudden and rapid, and of extreme violence, or it may be less rapid, and the force produced may tend more toward upheaval than fracture. The force, however, must act in a way not unlike that of gunpowder exploded in a mine, or steam bursting a boiler.

Where they are felt at the earth's surface, earthquakes are of three kinds —undulatory, perpendicular, and horizontal; the latter frequently appearing to be rotary or vortical. The first are the most common and the least mischievous; these seem to be the character, generally, of our tremors or convulsions on this coast. The second, much more rare, are far more destructive. The third are altogether exceptional; but when they occur in the neighborhood of towns they are altogether unparalleled in the disastrous catastrophes and the appalling loss of life that accompany them. The first are mere undulations, heaving the ground at any one place upward, and sinking it mostly rather gently downward, and producing the same or nearly the same result at a great many places along a certain definite course on the earth's surface. The second resemble the explosion of a mine; they consist of a sudden upheaval—a thrust upward—but with no undulation. The third are complicated, including a direct and sudden upheaval, with an advancing wave, either of the earth or ocean, and this complication produces a mixed motion, like that of a steamer advancing through a cross sea. We need not give an account of the greater earthquakes in various parts of the world, as they are well known to all. Earthquakes are sometimes preceded or accompanied by a peculiar state of the air and weather, by rolling, detonating, and other noises, and by marked electrical phenomena. The kind of noise that occurs is different in different places. Frequently it is a rolling, rumbling sound, like the moving of heavily loaded wagons over a hard or frosty road, although it may be in summer, as we once experienced in Kentucky, when, about 10 o'clock P. M., we were shaken for a few moments in our bed by one or two slight shocks. Sometimes it is like the clanking of chains; sometimes it resembles thunder close at hand; and now and then it has been described as clear and ringing, as if obsidian or other vitrified masses clashed together, or were shattered in subterranean cavities. The vibration is sometimes beneath the sea. Earthquakes are much more widely felt and more numerous than volcanic eruptions. We have bands of earthquake movement reaching from Japan through the Kurile Islands to Kamtchatka; and on the shores opposite are those of the Rocky Mountains and California, Mexico and the South American Andes, whose influence is felt on the oceanic rather than on the land side of the chain, owing to the compression of the mass of the land checking the wave. There seems a preponderance of earthquake action in the temperate and torrid zones on both sides of the equator. There are recorded between 6,000 and 7,000 separate earthquakes over every part of the known globe, both on land and ocean. About 8 in every 600 of those recorded were so destructive as to reduce cities and towns to rubbish, and destroy much human and animal life.

There have been upon an average about sixty earthquakes per annum, or rather more than one every week. Of great earthquake disasters there has been on an average one every eight months. In North America there are recorded 134 earthquakes; 86 of these took place in winter and 48 in summer.

The totals of winter and autumn are equal to those of spring and summer.

With regard to earthquakes in California, it is not, according to Dr. Trask, to be presumed that a greater frequency of shocks have occurred here than in some other parts of the earth, but that the same attention has not been bestowed in recording their occurrence in other countries, where they are known to be much more frequent and severe than upon our coast.

There is no good reason for the supposition that we are in more danger from these phenomena than upon the Atlantic border. Indeed, within a year or two they have experienced in the East as many shocks, at least, as we have; the reason of this being so is, that we are so far removed from the centre of immediate and volcanic action, that it would require dangerous tension of the imagination to place California within the range of those physical causes which are so conducive to violent, repeated, and destructive shocks. This State can not be considered more subject to earthquakes than it is to volcanoes, relatively, and this is said, too, in the face of our own records relating to the former. We need have very little fear from these disturbances, so long as we are so far removed on either hand from the great centres, and even from the terminal points of those centres of volcanic disturbance, from the action of which such disastrous consequences have therefore followed to their immediate districts. From careful inquiry of the early settlers by scientific persons, they have not been able to learn that any more than three or four earthqukes have occurred here which were in any considerable degree of a serious character, and but two of which have caused the destruction of either life or property to any extent. The earthquake of 1812 was the most serious; then about thirty to forty-five lives were lost. That of October, 1868, was much less serious, and but very few lives were lost. The winter months have given the largest number of shocks in the aggregate. The summer months the smallest. The autumn rather more than the spring months.

HISTORY AND CULTURE OF ALFALFA.

BY R. J. TRUMBULL, OF THIS CITY.

Alfalfa, Lucerne (*medicago sativa*).—This plant was cultivated in Greece 500 years before Christ, having been brought from Media. Later it was extensively cultivated by the Romans, and, through them, introduced into France. But by whom it was introduced into Chile is not known positively. Its cultivation there, at present, is very extensive, and in the pampas of Buenos Ayres it grows wild in the utmost luxuriance. From Chile it was brought to California, where it has proved itself the most valuable of all forage plants. In Europe it is known as *Lucerne*, and on the Pacific Coast as *Alfalfa*. There is no doubt that originally they were the same, but the modifications of climate have so affected what we know or style Alfalfa that it may now be regarded as a distinct variety. It sends down its tap-roots in mellow soils to great depths, having been found in sandy soils fifteen feet in length—far below the reach of drought. The flowers are a pale blue, violet or purple. Its seed is larger than red clover, and more of it is required to the acre. When the seed is ripe, it is yellow, plump and heavy; if unripe, it is small, and of a greenish hue; and if blighted or blasted, it is a dark brown. "When properly managed, the number of cattle which can

be kept in good condition on an acre of Alfalfa, during the whole season, almost exceeds belief." Twenty to twenty-five sheep are not considered too many to the acre when well established. The quantity of hay produced varies very much, as all soils are not equally adapted to it, nor are all growers of it equally careful in its culture, but we are warranted in saying that an acre will produce from six to sixteen tons of hay in a season. From experiments made in the Eastern States by many persons to whom we have sent samples of the seed, we are convinced that it is quite hardy.

Selection of Soil.—We are satisfied that many attempts which have been made to grow Alfalfa, and which proved failures, are to be attributed to the selection of improper soil. Thin soils and compact clay soils should be avoided, for in neither will it succeed to satisfaction. It will succeed, however, in a light soil which has a permeable subsoil consisting of loam, or sand, or gravel, into which its roots can penetrate and imbibe the moisture and nutriment found far below the reach of other plants. For Alfalfa a suitable subsoil is of the utmost importance. A comparative shallow soil will do for the short-lived, red clover, but Alfalfa, which, if properly managed, will yield abundantly for twenty-five years at least, should have a soil that will offer no hindrance to the extension of its roots.

Culture. — Thoroughly mellow and prepare the soil by clean and careful tillage. Have one plow follow the other, and this done in the most thorough manner. Harrow smooth and fine. Sow, in California, twenty pounds of good, clean seed to the acre. In our opinion, sixteen pounds is sufficient in the States east of the mountains, for they are favored with continuous moisture, which tends to make the plant more bushy and fully cover the ground. The seed should be "bushed in," and a light roller passed over to properly imbed it. In Central and Southern California, the seed may be sown during the fall and early spring. In the Eastern and other States, subject to severe winter weather, it should not be sown till all danger of frost is passed in spring. Alfalfa should be cut as soon as it begins to flower or even a little earlier; if cut much earlier, it is apt to be too watery and less nutritious; if later, it becomes coarse and hard, and is less relished by cattle. In no event should it be allowed "to go to seed" the first season, as the tendency is to materially weaken the plant. Strange as it may seem, the growing of Alfalfa improves rather than exhausts the soil. This, like other leguminous, broad-leaved plants, derive much of their nutrition from the atmosphere, and the vast quantity of roots which are left in the soil when it is at last broken up very greatly increases its fertility. As a fertilizer, it stands at the head of the list. It may be exterminated at any time by simply plowing thoroughly, and removing the crowns to some convenient place where they can remain till burned or rotted.

ENCOURAGE THE BIRDS.

We have recently noticed in a few of our exchanges suggestions that the introduction of some varieties of singing birds from the East would be an experiment worth trying, and also statements that Eastern quails and prairie chickens had already been imported and turned loose in certain portions of the State with encouraging results. These suggestions and facts merit more attention than they have yet received.

Not that the introduction of game-birds is particularly desirable at present, for we now furnish to sportsmen a better field than they can find elsewhere in the country, and farmers are often troubled now, as were once the Israelites in the desert, by an overabundance of quails. All the birds belonging to the family of which the prairie chicken and quail are prominent members are almost wholly granivorous, and, when occurring in a country like this, which offers so few drawbacks to their rapid propagation, and furnishes such abundant food in broad acres of grain, soon become great nuisances. During the comparatively few years since the settlement of this State, the California quails have increased so rapidly that only the annual slaughter in the fall keeps them within bounds, and if to them are added legions of prairie chickens and "Bob Whites," our farmers will soon be obliged to expend a good share of their yearly profits in buying powder and shot to rout these feathered invaders. The sportsman has his claims, of course, and laws for the protection of game can not be too stringent, but the farmer's rights are paramount, and if any one is to give way it must be the non-producer rather than the producer. The time will come to this State, as it has to nearly every other in the country, when the introduction of game-birds will be advisable, but it is not yet.

With the introduction of the other class, the singing-birds, the subject assumes a different light. California is very deficient in singing-birds, and every one who delights in the music of nature—and who does not?—would rejoice to see their number increased. Yet the farmer requires other reasons than æsthetic ones before he clamors for their introduction; he wants to see some material result of the proposed movement, some argument which appeals to his pocket as well as to his heart. Well, here he has it. The song-birds of the world, almost without exception, are insectivorous, and their numbers are largest and their songs sweetest where there is the greatest abundance of bugs and worms. When the problem of irrigation is solved—and it seems likely to be soon—the necessity of encouraging our own insectivorous birds, and introducing others from the East, will become imperative. There seems to be little connection between the two, but they will be found to be intimately related. For Nature's grand law is that of compensation, and no sooner are our many barren fields rendered fertile and rich with abundant crops, than she will send upon them all manner of winged and creeping and six-legged abominations, which will devour the grain and blight the tender vegetables, and blast the juicy fruits, and drive the tiller of the soil to his wits' end to keep them under. In this strait he will call upon the birds, for, with all his boasting of supremacy over the lower animals, man has never yet been able to cope successfully with the least of them, the insects; but he will call in vain if he depends upon the few native varieties. That evil day is sure to come; so, forewarned, let him be forearmed, and lose no time in bringing into his fields the cat-birds, the thrushes, the fly-catchers, and the countless other varieties which so assist the Eastern farmer, as well as delight him by their graceful presence and sweet song. But to insure their continuance with him he must provide for them by donating to them a useless grove or two, a moist thicket and a tangled cluster of vines, where they may nest and breed; but this small sacrifice of land will

bring him in a larger percentage of profits than all his broad, rich acres.

Yet a random gathering together of Eastern birds is not all that is necessary; some discrimination is needed in the selection, or the farmer's last state is worse than the first. Above all, let him beware of the English sparrow, that feathered pest which might reasonably have been the eleventh plague of Egypt, had not Pharaoh succumbed at the tenth, and which has already appeared, in small quantities, in this State. Whoever introduced it into this country was either wholly unacquainted with the characteristics of the various classes of birds, or else he employed this method of satisfying a grudge against our agriculturists, all of whom with any experience of the bird in question pray that his memory may be accursed. About New York, where they were first introduced to destroy the canker worms which were stripping the trees in the public parks, they turned from their allotted work, and descended like locusts upon the market-gardens and the orchards of small fruits, and devastated them so rapidly and fearlessly that the papers were full of howls from agonized horticulturists desiring information as to how they should save their property—for the astute Solons of the Legislature had prohibited the slaughter of the birds under heavy penalties — while the canker worms held high carnival, as if there wasn't a sparrow in the country. A half hour's study of ornithology would have shown the first advocate of the introduction of these birds that they, like nearly all sparrows, wouldn't eat bugs and worms while they could get grain and fruit; but he had never considered the subject, and the loss of thousands of dollars a year is the result. Besides all this, they raise four or five broods a year, and the parent birds of springtime are grandparents, at least, by fall, and, being of a very quarrelsome disposition, no other bird can live near them. So, beware, we say, of the English sparrow, but introduce and encourage the many valuable birds which could be brought from the East, and an increased production of crops and a farm free from the inroads of noxious insects will quite repay the trouble and expense, even if the songs of the birds, which are great educators of humanity and kindliness, are not taken into account.—*Bulletin.*

FABLES AND FLOWERS.

The historic and fairy mysteries connected with flowers are many and sweet. From time immemorial they have been the elfin wee, and the cups from which fairies have sipped dewdrops; beneath the concealment of their leaves mischievous brownies have hidden, only venturing forth to perpetrate some of the tricks and bewitching frolics which they have plotted in their sweet homes, where, one would suppose, gentle deeds would be inspired.

A few of the lovelier meanings and more interesting facts respecting flowers I offer you, gleaned from many sources—a wild and mingled poesy—but the perfume of fields and woods may still cling to them, and if so I need offer no apology for its scantiness or crudeness.

We can never weary of the beautiful and ancient fable of Anemone. Venus loved the beautiful youth Adonis. As she was with him in the forest one day, he perceived a wild boar, and, despite her entreaties, gave it chase and drew his bow. The arrow hit its mark, but the infuriated beast, only stopping to draw the dart from his side, turned upon Adonis and gave him his death

wound. Venus heard his cries as she was floating through the air in her chariot toward Olympus; she turned back, and hastened to the spot where Adonis lay. In despair, as she sees him dying, she lifts her hand in supplication, the finger-tips reddened with his heart's blood. A zephyr comes and wafts the ruby drops to the earth, and there springs up the delicate Anemone, the wild flower.

Too closely allied with the goddess of beauty that it should be omitted, is the history of the red Rose. As Venus flew through the woods to her wounded Adonis, a treacherous thorn pierced her foot, and the blood which flowed fell on a white Rose, which ever after retained the hue.

The sorrowful story of Narcissus causes us to regard that pale flower with sadness—the poor foolish youth who fell in love with his own image, which he saw reflected in the clear, deceptive waters as he reclined on a mossy bank at the brookside. Yearning after this mythical being, whom he could never find except at the brooklet, and who would never address even one word to him, he wasted away with sorrow and weeping, until all that remained of the poor youth was the pale Narcissus.

There is the Poppy, which is said to grow at the entrance of the Palace of Sleep; and the beautiful Hyacinth, memento of the dead youth Hyacinthus, whom Apollo loved.

The Rose has many legends connected with it, and was the best loved flower of the ancients. Wreaths of Roses always encircled their wine cups at feasts, as they believed the presence of this lovely flower dissipated the intoxicating property of the red wine.

Margaret of Anjou, the fair young queen, glorified the beautiful Daisy when she left France to become the bride of Henry. She took it as her emblem, as suited to her extreme youth, and, we may add, loveliness. In her honor all the nobility of France wore it emblazoned on their crests, and the king added it to the decorations of his crown. The Marguerite may have derived its name from the fact also.

Of the wee Forget-me-not, the flower of heaven's hue, we have pretty tales. A lofty Plantagenet did not deem this floweret too lowly to adorn his crest; and he, it is held by many, first endowed it with its poetical name. As he was about to leave France and claim his English throne, he had a spray of this flower emblazoned on his shield, and caused his initials to signify in regard to it, *Souvenez-vous de moi*—forget-me-not. The German maiden, while standing at a brook-side with her lover, longs for the flower blooming on the opposite side of the stream; he plunges into the water to gratify her half-spoken wish, procures the cluster of flowers, and just as he would regain the shore where she stands waiting, his strength fails; with one desperate effort he casts the flower upon the bank, and, dying, prays, "Forget-me-not." Maidens' tears we read in this sweet flower.

The Thistle is a sturdy flower, by many greatly despised; still, we should not look alone at its rough setting, but at the royal amethystine heart. Many years ago a powerful enemy invaded Scotland. Having planned to surprise the Scottish forces at night, they removed their boots that they might approach the sleeping garrison more stealthily. When near the encampment, one of the foe stepped on a thistle; he cried out loudly with the pain, aroused the camp, and Scotland was saved. No wonder they adopted it as their national emblem.

AFTER THE RAIN—A CALIFORNIAN PICTURE.

BY MRS. E. A. S. PAGE.

When the hills are growing green
Where the insatiate drought has been,
How the grand, resistless forces
Of the earth, and sun, and sky,
Nature wields, like some magician,
To revive and beautify!

Then the wild and turbulent rains
Wash away the grime and stains,
Till the dun and sullen landscape
Wears a loveliness untold,
Like some gem of rare old painter
Brought to light from dust and mold.

Then the humid atmosphere
Takes all hues, compact or clear;
Pearl-gray clouds like quarried snow-drifts,
Violet haze where waters glide;
Crimson banks with rifts of opal
Down the west at eventide.

Or the day strikes clear and bold
Up the east suffused with gold,
Till the brown hills stand transfigured,
Canon, crest, and wooded height,
Sharp, as if by hand of sculptor
Carved against the walls of light.

Unperceived, what beauty creeps
Up the bare and rugged steeps;
Yellow moss that garners sunshine,
Soft tints piercing the brown mold,
Like a marvelous mosaic
Set in lichens gray and old.

Soon the glades with gorgeous hues
Springing grasses interfuse;
Purples and such bits of color
As an artist's palette shows;
Dash of ruby, streaks of amber,
Flakes of amethyst and rose.

Green the Eucalyptus towers
Sentinel of all the hours;
And the regal Oaks, that tempests
Of gray centuries have defied,
With a low deciduous murmur,
Weave anew their crowns of pride.

And the soul keeps holy time
In the budding, rain or rime;
Blooms the sweet celestial manna,
Falls the hydromel unseen,
For the festival of Nature
When the hills are growing green.

THE BOTANICAL GARDEN.

There is an aspect of the question of the establishment of a Botanical Garden in this State that has not been sufficiently considered in the discussion of the subject by the press. We refer to the fact that such a garden, in which living specimens of all the more important, useful, and ornamental plants can be exhibited to the student, stands in a similar relation to instruction in agricultural pursuits, as the library, laboratory, and museum do to literary and other scientific studies. As an indispensable adjunct to instruction, the establishment of a garden of general and economic botany at Berkeley is, therefore, merely a question of money and time, and can not be, in the nature of things, very long delayed. We understand that the subject has been urged upon the Board of Regents by Professor Hilgard from the outset, and that want of funds alone has stood in the way of immediate realization. It stands among the first on the list of improvements contemplated in the Agricultural Department of the University, and the question is whether it shall be slowly built up out of the current income of the institution, or called into existence and usefulness by a Legislative appropriation for the purpose.

There is much misapprehension both as to the character and necessary cost of such a botanical garden. The Garden of Plants at Paris, which is so often mentioned in this connection, is the slow growth of over two centuries, and can not reasonably be made the model of what California is now prepared to do. The most costly feature is the collection of animals and the building for the museum with its contents, which form a part of the educational appliances of the University of Paris. Sim-

ilar considerations apply to the Kew Gardens; and were establishments of this kind the thing in view, the proposed appropriation of $25,000 would indeed be absurdly inadequate. But for a garden of economic and general botany, which shall fulfill the purposes of the *Jardin d'Acclimatation*, to subserve the legitimate objects of instruction and experiment in connection with the University, the sum is not at all inadequate. The Durfee Plant-house at the Massachusetts Agricultural College was built for $3,500; $5,000 would put up on the University grounds a similar building, of which the State might well be proud. $12,000 would go far toward stocking and preparing both plant-house and grounds, leaving a balance to defray the running expenses for some years to come, in view of the fact that but little additional *skilled* labor, beyond that already employed on the grounds, would be required. It is not at all difficult to so combine usefulness and beauty that the University Park, outside of the Agricultural grounds proper, shall largely be made available for the purposes of illustration and instruction, so as to afford sufficient room for reasonable completeness in the list of plants.

We trust the time will come when California, with her wonderful climate and facility of communication, will possess a garden of plants and animals that will easily rival the magnificent establishments of England and France. But that which is most needed should be done first, and at the place where it will be most useful to the instruction of youth and to the development of the resources of the State. From such beginnings a natural and healthy process of growth will gradually and surely carry us to the realization of the more comprehensive plan, which it would be fatal to attempt at this time.—*Bulletin.*

ON GATHERING RIPE FRUIT.

This is what Josiah Hoopes, well known as a nurseryman and horticulturist of Chester Co., Pa., says:

"In regard to the gathering of ripe fruits of different kinds, no fruit should be taken from the tree or plant during a damp time, and especially when the dew is plentiful in early morning. Never be so hurried as to find any cause for the excuse, 'I had no time to hand-pick my fruit, and consequently was forced to shake them off,' for such is poor policy. Fruit so gathered will almost inevitably decay from the effects of bruises. Each specimen should be taken from the tree one by one, handled as if they had been so many eggs. The lightest bruise or abrasion of the skin is the sure forerunner of a dark spot, which will eventually change into some form of rot. The spores or seed of *fungi* are always ready to assist in the work of dissolution, and the slightest scratch gives them a foothold for their destructive work. Scarcely any variety of the largest fruits color and ripen so well if left to perfect themselves on the tree, and especially is this true in respect to Pears. Summer varieties, as they approach maturity, loosen their hold somewhat on the limb, and by gently raising the fruit they will easily detach themselves at the proper period. This is an excellent test, and may always be relied on. To color up fruit nicely, all that is necessary will be to spread a blanket on the floor of a cool room, and then thinly and evenly place the fruit on the floor. A second blanket must be spread over them, and in a short time the effect of this treatment will be apparent in the most golden colored Bartletts, and rich, ruddy-looking Seckels imaginable. Pears perfected in this manner rarely have the meali-

ness of their naturally ripened companions, nor do they prematurely decay at the core as when left on the tree. Peaches are too frequently gathered before attaining the full size, and when this is the case we need not expect good flavor. They must obtain this requisite before gathering; although it is not necessary to delay picking until very mellow. As a general rule, all small fruits are gathered too early; and, as high color is not a sign of maturity, many experienced fruit-growers are frequently misled. Never pick Strawberries because they are red, nor Blackberries solely on account of their dark appearance. Each should remain on the plant for some time thereafter. The Albany Seedling Strawberry changes to a deep crimson hue, and gains continually in size after its first coloring process. It is then soft, and excellent eating. And so with Blackberries in like manner, many complaining of their extreme tartness, when the fault was in gathering imperfect fruit. The Lawton or New-Rochelle variety, in particular, is delicious eating, if allowed to remain on the plant until soft, when the slightest touch will sever its hold. Strawberries picked with the calyx (or hull) adhering will always carry better and be less liable to decay than if carelessly pulled off without this appendage. The foregoing remarks in relation to the proper time for gathering fruits are equally applicable to the Grape. These generally color long before they are mature; and thus many a novice in fruit-culture frequently forms an unjust opinion of his varieties simply from testing unripe specimens. Grapes should always be severed from the vine with strong scissors or trimming shears, and never twisted or broken off. The nice appearance of fruits of all kinds, in their boxes or baskets, in the markets, will command a better price than when slovenly 'done up.'"

ORCHIDS AND THEIR VARIETIES.

A few years ago but few Orchids were seen growing in private establishments, arising from an erroneous belief that they could only be grown where a high temperature and moist atmosphere were maintained, and therefore to try their cultivation in a common greeenhouse, among other plants, was useless. Such false notions have of late years been giving way, and now in every good collection of greenhouse plants are found a few, and in some collections a large number of the different species of what are termed "cool Orchids," among which are found some of the finest species of the Orchid family, and at this dull season of the year are found enlivening, with their superb blossoms, the greenhouse. We shall therefore give a short description of some, the kinds in flower now, and which can be grown with success in a common greenhouse.

Cyprepedium insigne.—This is one of the oldest inmates of the greenhouse; the flowers are produced singly, on a spike about a foot high, the petals and sepals being of a greenish white, spotted with brown, the dorsal sepal tipped with white. They last a long time in flower, and increase very rapidly. If the plants get liberal treatment, large specimens can soon be procured.

Dendrobium nobile.—Another old species, the flowers being produced along the sides of the ripened stems. They are of a pinkish white, with a large purple spot on the centre of the lip. This plant does best in a basket, grown in a mixture of sphagnum, peat, and pieces of charcoal. When growing water abundantly. Toward the completion of its growth, withhold water, and

during the season of rest, just give as much water as will keep the stems from shriveling.

Lælia anceps.—From Mexico we have this beautiful Orchid. The flowers are produced on spikes from the top of the bulb—the sepals and petals a rose lilac, the lip a dark purple. This Orchid does best in a dry, cool house, and is well adapted for the greenhouse.

Zygopetalum crinitum.—The flowers of this Orchid are produced on spikes from the base of the bulbs. The petals and sepals are green and brown, the lip white, streaked with blue. They are sweet-scented.

Lycaste Skinnerii.—Of all cool house Orchids, this stands pre-eminent. There are a great many varieties, all well worth growing, and the flowers last for months in perfection. The sepals and petals are of a light rose, darker towards the base, and the lip spotted with crimson. In some varieties this spotting is of a very bright color.

This class of plants, when in flower, should be kept dry, and no water allowed on the flowers, as it soon causes them to decay. None of the Orchids is better adapted for decorating the sitting room or parlor than *Lycaste Skinnerii.* If taken in from the greenhouse when the flowers open and kept in a cool room, they will last for several months in perfection.

EFFECT OF CAMPHOR ON SEEDS.

Some curious and all but forgotten experiments of much interest to agriculture and gardening, observes a London paper, have lately been revived by a German savant. Very many years ago it was discovered and recorded that water saturated with camphor had a remarkable effect upon the germination of seeds. Like many another useful hint, the stupid world took no notice of this intimation; but a Berlin professor came across the record of it, and he appears to have established the fact that a solution of camphor stimulates vegetables as alcohol does animals. He took seeds in various sorts of pulse, some of the samples being three or four years old, and therefore possessing a slight degree of vitality. He divided these parcels, placing one moiety of them between sheets of blotting-paper simply wetted, and the other under strictly similar conditions between sheets soaked in the camphorated water. In many cases the seeds did not swell at all under the influence of the simple moisture, but in every case they germinated where they were subjected to the camphor solution. The experiment was extended to different kinds of garden seeds, old and new, and always with the same result of showing a singular awakening of dormant vitalism and a wonderful quickening of growth. It also appears from the professor's researches that the young plants thus set shooting continued to increase with a vigor and vivacity much beyond that of those which are not so treated. On the other hand, when powdered camphor was mixed with the soil, it appeared to exercise a rather bad effect upon the seeds. The dose in this latter case was possibly too strong. At all events there is here a line of inquiry well worth following up by seedsmen and gardeners; and even farmers might try how far wheat and barley would profit from the strange property which seems to be possessed by this drug over the latent life of vegetable germs.

Positive good comes by using tepid water on all plants, while evil is often wrought by cold water.

REMEDIAL ACTION OF THE AILANTHUS.

The Ailanthus, as an ornamental and shade tree, has of late years gone into disrepute on account of the offensive effluvium of its male blossoms, and its planting in Washington was positively forbidden by an Act of Congress—at least an appropriation for the District of Columbia, made some years ago, was granted upon the condition that no Ailanthus trees should thereafter be planted in the city of Washington. The tree is, however, one of very great value as a timber tree, and is highly recommended for growth upon the Western prairies, as its development is extremely rapid, and the wood is equal to Chestnut in mechanical properties. It is one of the largest trees known, being said to attain a height of 300 feet in China. Very little attention has been directed to its medicinal virtues; but according to Dr. Robert, of the French naval fleet in the waters of China and Japan, the bark of the root, in the form of a powder, is more efficient in the treatment of dysentery than ipecac, calomel, astringents, opiates, etc. For this purpose, one part of the bark of the root is cut into very fine pieces and pounded up in a mortar, to which one and a half parts of warm water are added. The whole is to be allowed to stand for a sufficient time to soften the bark, and it is then strained through a piece of linen. The infusion is administered in doses of a tablespoonful, morning and evening, either pure or in a cup of tea. This is to be continued for three days under a very strict dietary regimen. After that, bread and milk may be given, and, subsequently, ordinary diet. If at the end of eight days a cure is not effected, the treatment may be renewed. This substance is extremely bitter, and its administration frequently produces nausea. In Dr. Robert's experience, a complete cure was almost always brought about within eight days; in only one instance was it necessary to renew the application.

STARTING ANNUAL FLOWERS.

So far as relates to the removal of this class of plants they might be divided into two distinct sections—those that can be readily transplanted, and those which are almost sure to die if disturbed. The first of these will make better plants if the seed is sown at this season in boxes of light soil, and placed in a warm, sunny window. Do not bury small seed, but merely sprinkle them upon the surface of the soil; gentle watering will cover them sufficiently for germination to ensue. A good plan is to place a little soil in a fine sieve, and while holding it over the pot of seeds give it a slight jar; this will be amply sufficient to cover them. Large or medium sized seeds should be pushed beneath the surface, to a depth depending solely upon the size of the same, as the larger the seed, the deeper it may be inserted. This may seem of trivial importance, but professional gardeners think differently; hence their better success. The young seedlings will appear sooner and more evenly if the box should be covered with a pane of glass; care being taken that the moisture is wiped off once a day, and a little air admitted as soon as the young plants show themselves above the soil. Grown in this way, Potulaccas, Phlox, Mignonette, Zinnias, Marigolds, Ageratum, German Asters, Cockscombs, Balsams, Gilliflowers and Petunias, appear to form better plants than when grown in the ordinary way, by sowing the seeds where the plants are to remain. On

the other hand, Lupins, Eschscholtzia, Œnothera, etc., must be grown where the seed are scattered. If the colors are to be grown in separate lines for ribboning, the young plants can be planted out in different styles so as to form very pleasing effects. Select a damp, cloudy day for removal, and shade with paper at first, when the sun is not obscured.

OLIVE CULTURE.

A writer in a contemporary corrects the erroneous impression which has gone abroad that Olive-trees do not bear for eight or ten years after planting, and says that he has trees in San Diego County which bore at three years. It is difficult to see how such impressions could be given, for it is a well-known fact that Olive cuttings stuck in the ground will produce fruit before there is wood enough to support the load. We have frequently seen Olives over an inch in length grown on trees so small that the fruit could be picked from the topmost branches without the use of a step-ladder.

And this leads us to remark that San Diego and Los Angeles Counties are not the only localities by any means where the Olive will flourish. There are a number of large trees in the old Catholic church-yard in Santa Clara, which are noted for the fine fruit produced. The middle portion of the State as far north as Red Bluff is admirably adapted to the growth of these trees. Very little direct and reliable information has been disseminated as to the productiveness and profit of the Olive, or the orchardists of California would certainly have given the subject more attention. As high as 200 gallons of fruit have been gathered from one tree in the Olive groves of the Jesuit priests, San Gabriel Mission, and the entire orchard would probably average 100 gallons to the tree. Of course this is not to be taken as a criterion, as these trees are almost a century old, having been planted by the Jesuits soon after this Mission was established. But at five years of age it is safe to say that the trees will yield 50 gallons each, which, at 75 cents a gallon, and 100 trees to the acre, would be $37 50 a tree, and $3,750 an acre.

This is an average price for the Olives for the purpose of pickles. The manner of taking care of the fruit is very simple. After the fruit is gathered it is put in barrels and covered with water, which is drawn off and fresh water added every two days, for about four months. This deprives them of the bitter, milky substance, after which they are either placed in salt and water, or vinegar, and are then ready for market.

No more handsome trees can be planted to adorn a farm, the dark green foliage making a dense shade, and presenting a beautiful appearance, especially when viewed at a distance.—*Call.*

Prices of Rare Plants in England.—In London, last month, a collection of Orchids, consisting of 639 lots, brought £2211 14s., or more than $11,000. One plant of *Saccolabium guttatum*, described in the catalogue as being "from two to three feet high and wide," and as having "twenty-two strong leaves, two strong young plants at bottom, with ten and eleven leaves respectively," and as having "produced ten spikes of bloom this year," was sold for £65 2s. (about $325). Twenty, thirty, and even forty pounds were freely given for other lots, very few of which brought less than ten guineas.

Editorial Portfolio.

OUR FRONTISPIECE.

We present our patrons, this spring month, with a delicately colored and most graceful group of some of our deservedly favorite flowers: Weigelia Rosea, Moss Rose, and Persian Yellow Rose. The Weigelia Rosea is a very beautiful and profuse flowering shrub, growing about six feet in height, with pink flowers intermixed with a little white, similar to Apple blossoms. It is a desirable addition to every good garden or shrubbery, and makes a handsome display of lovely bloom, mingled with its vividly green and finely-formed leaves in the spring and summer. It is indeed a most strikingly showy plant. The Moss Rose, or, as it used most generally to be called, the Moss-Provence, is considered by the best authorities to be a distinct species from the *Rosa Centifolia*, but its original country is not known. It is a fine delicate Rose of great fragrance. But that which renders it of such great estimation is that singular and rough, moss-like substance which surrounds the calyx, and the upper part of the peduncle or footstalk of the flower. We have not found the climate of San Francisco favorable for this species of Rose, as well as some others, in the open air, on account of our strong and rather cold winds. It is very much subject to mildew, with many others, but in some of the milder climates on this coast does well. The Persian Yellow Rose is one of, if not the very, best of our yellow varieties. It blooms well, and is, in fact, the only dark double annual bloomer we have. It is impossible to mention Persia without recalling ideas of love, Roses, and nightingales! We naturally turn our thoughts to a country so peculiarly interesting—"to those romantic regions of the sun"—to a country which has been selected by some—not without reason—as the site of primeval paradise, and which is now emphatically *paradise lost!* It is still a garden where nature revels in the most unbounded luxuriance, but where man is fallen, indeed, yet still

"Where the soft Persian maid the breath inhales
Of love-sick Roses wooed by nightingales."

We are reminded on our return of spring in California of the following beautiful stanzas of the Persian poet, Hafez, on the same subject (substituting the mocking-bird for the nightingale):

"The love-struck nightingale's delightful strain,
The lark's* pathetic note, are heard again;
Again the Rose, to hail spring's festive day,
From the cold house of sorrow hastes away."

"See, where the Rose and spring to mirth awake!
So cheerful looks the Rose, 'twere wisdom's part
To tear the root of trouble from the heart."

CALIFORNIA HORTICULTURAL ASPECTS AND PROSPECTS.

Mr. R. J. Trumbull, one of the most practical and intelligent nurserymen and florists of this city, in his "Guide and Catalogue" truthfully, we consider, speaks of California's position and prospects in horticulture: "Our coast, with its charming climate, its unrivaled scenery, and its marvelously wonderful productiveness, is well worthy of constant study. This much-favored land should have much consideration bestowed upon it. Time was, and that not many years ago, when California was only known to fame by her crops of bullion; but now her genial and health-giving climate, with her bountiful and handsomely perfect vegetable productions, are not only attracting but challenging

* The meadow-lark.

the world. The future reputation of this coast rests with the tillers of the soil. We have only begun to demonstrate what our soil and climate are capable of producing. We have the facilities, if brought into proper exercise, of furnishing our neighbors over the mountains with a full supply of Oranges, Lemons, Limes, Prunes, Figs, Raisins, Almonds, Guavas, Bananas, and we believe eventually, with Pineapples. The market for these fruits may be said to be without limit, and the culture of them in this State has been simply experimental. Now, however, the great aim of our fruit-growers should be the highest possible degree of perfection. There will soon be no more need of New York merchants sending to foreign countries for the fruits we have named, than for San Francisco to send to Australia for a supply of flour, if our fruit-growers will bestir themselves. Nearly all the semi-tropical fruits required for the supply of the United States may be produced in our Golden State, and shipped to the remotest points fresh and sweet as if just picked from the trees."

THE ALDEN PROCESS FOR PRESERVING FRUIT.

We have several times noticed this valuable invention. Past experience has strengthened our confidence in it. More than 200 Alden factories have been established in the United States. Articles dried by it are cheaper, when the quality is considered, than by any other mode, and they are brought to resemble more the fresh fruit than in any other way of preservation. It is contended that by it fruits of a particular description, such as Apricots, Plums, Grapes, Peaches, and Nectarines, can be raised with profit, especially near the Alden establishments, at one cent per pound; and for the following reasons: 130 trees to the acre, and 100 pounds of fruit to the tree, is not a high a high estimate, and yet will yield $130 per acre at this price. This will be better than any kind of grain raising, in the long run at any rate. In California we can produce an almost unlimited quantity of the above fruits, because we are as yet almost entirely free from destructive insects compared with the Eastern States. With regard to Apples the States east of the Rocky Mountains, we acknowledge, can surpass us, but, in the majority of fruits, we have immensely the advantage of them. The policy of the Company is to employ the best workmanship, and to use the best material, with instructions to do everything in the most thorough manner. To dry fruit so as to make it keep is the sole idea of many persons. Dried fruit of any kind is dried fruit to them, and there are customers just like them, and hence the poorer qualities will find a market at a poor price. But to produce first-rate dried fruits, free from insects and their eggs, so common with the fruits dried in the open air, is a most important point. This the Alden process does, with extra care and attention bestowed in preserving the color uniform, without the appearance of burned or decayed spots, and the Company is rewarded in the extra price their fruit brings in the market. They are now producing fruit jelly, fruit flour, and crystalized fruits, conserves and marmalades. Their raisins have given great satisfaction, and have nearly, if not quite, equaled in the market the foreign article. This is undoubtedly going to be a great business on our coast, and we can go far to supply the world in all the above-named dried and preserved productions. Per-

sons who wish to enter into the business of fruit-raising will do well to confine themselves, as far as regards the markets and supplying the Alden Company, chiefly to the cultivation of the Apricot, Plum, Grape, Peach, and Nectarine. These will pay better than growing the Apple, Pear, Cherry, etc.

CATALOGUES RECEIVED.

R. J. Trumbull's "Guide for 1876 to the Vegetable and Flower Garden, and Catalogue of Fruit and Ornamental Trees, Shrubs, and Bulbs, Plants, etc." Warehouse, 419 and 424 Sansome St., San Francisco. Nursery, corner H and Centre Sts., San Rafael. Annexed to the "Guide" is a catalogue and price-list of semi-tropical fruit-trees, embracing many new varieties. Mr. Trumbull has paid much attention to the Blue Gum (*Eucalyptus globulus*), the Monterey and Italian Cypress and their culture, and has a great number of these for sale.

D. M. Ferry & Co.'s "Seed Annual for 1876, illustrated and descriptive, comprising an extensive and excellent list of Garden, Flower, and Agricultural Seeds," from Detroit, Mich. This work forms quite a large volume, and contains valuable hints and instructions on all the above seeds.

Root's "Garden Manual and Seed Catalogue of all kinds of Seeds for 1876," Rockford, Illinois. In this are good directions for the cultivation of all field produce and garden vegetables; also for the destruction of all field and garden pests.

Beach Son & Co.'s "Annual Spring Catalogue, 1876, comprising a complete assortment of Flower and Vegetable Seeds, Flowering Bulbs, Gladioli, Lilies, etc." This is appended to their quarterly illustrated journal, the *American Garden*, devoted to garden art.

J. M. Thorburn & Co.'s "Annual Descriptive Catalogue of Vegetable and Agricultural Seeds, embracing every standard improved variety; also, tested novelties." No. 15 John Street, New York.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

We have observed rather more plentifully in our markets this winter than usual the Shaddock, which may not be familiar with a majority of our citizens. This tropical fruit is like a large, coarse Orange, with a very little of that fruit's flavor, and a good deal of stringent bitter, especially when any portion of the skin, or parts of the division which separate the fleshy pulp, are eaten. Therefore, for a hand fruit, it is not of much value; but for preserves, it, no doubt, is good. Still, in our markets we never have a sufficient quantity of them to reduce their price sufficiently moderate to induce people to use them in that manner. We are informed that when this imposing looking fruit has fully ripened on the tree, its juices are saccharine and subacid, and those which are heavy and soft are usually found the best. We believe it is not much cultivated in the southern parts of California owing to the far superior qualities of the common Orange.

Among those fruits which are least common in our markets is the Medlar (*mespilus*). This fruit is quite round, and about as large as a Plum, though some varieties are nearly as large as the small Lady Apple. The color of it is brown. The pulp is thick, and contains five wrinkled stones; but they are not esteemed for the table until they have

been kept some time, or been touched out of doors with a little frost. The large Dutch Medlar is of the best quality. Its flavor is peculiar, but much liked by some persons, who have acquired its taste by the habit of eating it, similar to that relish which can be gained by the perseverance of some, who, disliking them at first, become greatly fond of Olives and oysters. It is a fruit which is much grown in Europe, and forms, generally, a portion of the dessert of fruits at Christmas time, after the substantial portion of the dinner is removed from the table. It is considered a very wholesome fruit, although it is eaten while actually in a state of decomposition. We have so large a range of fruits in California, that Medlars are but very seldom seen on the stalls. Miller, in his *Gardener's Dictionary* published in England, names eight varieties of the Medlar. It grows naturally in Sicily, where it becomes a large tree. It rises there with a straighter stem, and the branches grow more upright than it does here or in England. The flowers of the Dutch Medlar are very large, and its fruit are the largest of all the varieties. The Mespilus (*arbutifolia*) grows naturally in some parts of this continent. It but rarely rises more than five feet high. It produces a small roundish fruit a little compressed, of a purple color when ripe. All the sorts grow taller and succeed best from the seed, instead of grafting or budding upon the common white Thorn.

There is another fruit which we observe now more frequently in our fruit stores than we have formerly. It is the fruit of the Tamarind. This fruit, or rather pod, has anything but a tempting appearance. It looks like so many dry brownish chips. But that which they contain is a very agreeable mixture of a material composed of sugar and Lemons. But it is most found here in a preserved state in our drug, grocery, and fruit stores. It is generally used, though, without preparation as an article of food, and occasionally as a medicine. There can be no doubt of the Tamarind tree bearing good fruit in this State equal to that imported. Indeed the trees are now succeeding in various portions of the country. The best are cured with sugar, and are known as the sugar Tamarinds. Another kind is also cured with molasses, and known as the common molasses Tamarinds, or West India Tamarinds. These are all excellent for fevers. This fruit is in season all the year round, but is best with us in the months of February and March.

About the months of October and November we have a few Whortleberries, Huckleberries, or Blackberries. We have at least one kind, chiefly found in the northern part of our coast, equal to the Eastern kinds. There are several varieties of this prolific fruit known, among which those growing on the high bushes are usually preferred. The best variety is called the Swamp Huckleberry or Blueberry, which yields the largest berry, of a purplish black; when ripe is subacid, rich, and juicy. Another variety, called the common or Highbush berry, is also a rich, fine berry, of a dark blue color, or almost black. We have also one species of a crimson color, which we found in Mendocino County, but we never saw it in the San Francisco market. It has small seeds and is very juicy, sweet, and delicious. The different sorts sent to this market from the North are generally found mixed up together, except the crimson or red sort.

We have never seen the Shepardia or Buffalo berry in the San Francisco market. This fruit is of the size and appearance of a large Currant of a red or

scarlet color, and grows in clusters, with a rich taste, and used principally for and makes excellent preserves.

Pomegranates are not very abundant at present in our markets. Indeed they are so uncommon here that few persons know anything about them. They are not very much prized for eating, but rather more as curiosities; so we will describe the fruit. It is about as large as a medium-sized Apple, having somewhat of the appearance of a smooth Apple Quince, but with a red cheek, full of seeds, and divided into sections. When it becomes ripe there is a soft, juicy, agreeable acid pulp around the seeds. The rind and inside partitions are hard, tough, and highly astringent. Ripens here generally in August and September. It makes an excellent medicinal syrup, either for fevers or inflammations.

There is a kind of Orange, though scarce here, called by some the Gripe-fruit or Forbidden-fruit. It is of a bitter and tart flavor. The inside skin which surrounds the fleshy cells is of a disagreeable bitter. They have much the appearance of the Shaddock, but smaller. In season usually with the Orange, but not much admired.

We have, in the season, the Citron. This fruit is of the Lemon species, but larger, warted and ribbed or furrowed. Its thick, fragrant rind is generally found in abundance in the groceries, etc., in a preserved state; this and the pulp, which is a subacid, are used in confectionery, sweetmeats, plum-cakes, plum-puddings, preserves, etc. Abundance of Citrons are raised on our slope.

We sometimes observe specimens and quantities of the Avocado or Alligator Pear (*Persea gratissima*) on some of our fruit stands. This fruit is about the size of a medium-sized Pear, pyramidal in shape, and when ripe of a yellow color. It is very grateful to the taste, and must be most delicious when ripened on the tree in a tropical or semi-tropical country, but we have it here gathered before it is ripe, and unlike the Orange it does not ripen so well after it has been picked when green.

The Granadilla or Mayapple (*Passiflora edulis*) is very rarely found here. In the southern States, and in south California, it grows in the greatest perfection, generally about the size of an Apple, and larger, with a sweet, yellow pulp. It is found mostly in the southern cities of the Union, where it is used as a dessert. It requires a very warm climate.

A few Strawberries were received during the second week in January, but the quality was poor and they were neglected by buyers. California Oranges came along slowly, not being in very good demand, as they were still unripe. The market was well supplied with California and foreign Lemons and Limes, and prices were low. Strictly choice Apples were very scarce and retailed by the box readily at $3 50, while Oregon and common California were plentiful at $1 50@2 50, delivered.

Cucumbers, Green Peas and Tomatoes had disappeared during the week. A few String Beans were still in market, but the supply lasted but a few days. The frosty nights cut off the supply of Mushrooms, and no more will be received until the weather moderates. Potatoes were cheaper and sold by the single sack at $1 50@2 ℔ 100 lbs., delivered.

About the 20th of last month (January) the list of Domestic Fruits was reduced to Apples, Oranges, Lemons, Limes, and Citrons. Apples of ordinary quality were moderately abundant, but the choicer sorts were very scarce and readily commanded extreme figures.

By the single box the various grades sold at $1 50 to $3 50. The great bulk of the Apples were Newtown Pippins chiefly; we believe from Oregon. These Apples are another instance among many of how much a kind of fruit is changed or modified by climate and soil in different portions of the States and Territories. The Newtown Pippin of California and Oregon has generally a blush on the side next the sun nearly as red as the Maiden Blush Apple. When it is nearly ripe and most juicy its texture is quite hard and rather tough, and when it is quite ripe it is rather spongy and almost juiceless. We have eaten them most in perfection from the "Suscol Orchards" of Mr. Thompson, not far from the city of Napa. The climate there is a happy medium between the extreme heat and cold of the general California climate; and these extremes in that valley (Vallejo) are modified by the breezes from the ocean and the bay of San Francisco. The Newtown Pippins from these Suscol Orchards are more like the same fine fruit of New York State and many parts of the Eastern and Middle States.

The supply of Pears in the market has been meagre during the whole season, owing to a deficient crop and heavy shipments to the East, and at the present time (February) very few of any kind are to be had. We miss, this winter, many of the Nelis, Glout Morceau and Easter Beurre. California Oranges are now coming forward very freely, and will soon control the markets. The last of the stock of Mexican were worked off at the end of January, and the domestic became ripe and profitable. Lemons and Limes have continued abundant up to the present time.

The assortment of the vegetable market at the end of last month (January) was very meagre. Cabbages and Cauliflowers were scarce, and wholesale rates had been raised, though no change had been made in the retail prices. The cold weather still kept back the supply of wild Mushrooms, and none but a few of the attractive variety were to be had, and these at very high prices. Potatoes by the single sack were steady at $1 75 ℔ 100 lbs., for good to choice.

Oranges, Lemons, and Limes, were plentiful, while in tropical fruits the stock of Bananas and Pine-apples were sufficient for all requirements. Apples and Pears were scarce and dear, the former selling by the box at $1 50 to $3 50.

Correspondence.

THE SKINNER SEEDLING.

EDITOR HORTICULTURIST:—I see in the December number of your most excellent magazine (a publication that every tiller of the soil should take) an article on Seedling Fruits. It is true, as the article states, that the most serious hinderance to many who would plant seed is the lack of time and patience. Necessity, they say, is the mother of invention, and it certainly was so in the following case:

In the fall of 1848, H. C. Skinner, Esq., of Milwaukee, Wis., contemplated emigrating to California the following spring, and thinking he was going to a wild country, where there was no fruit, bought several barrels of Apples, the seed of which he saved to plant in his new home. Settling on the banks of the Coyote River, about one mile east of San Jose, he planted his seed and nursed the young plants with care and pride, and was finally rewarded for his labor by the production of five or six plants of fair average fruit, and one plant of the finest table fruit, named the Skinner Seedling, that I ever ate,

but unfortunately little known among fruit growers. The fruit is of a beautiful yellowish color, tinged with streaks of red, very much resembling in size, shape, and appearance the Smith's Cider, but far superior to it, as the skin is soft and thin, exceedingly juicy, and of a delicious aromatic flavor. There are some trees of the fruit still on the old Skinner place, a number on Mr. King's place adjoining, and a few in other orchards in the neighborhood. Fruit growers could not do better than to get some of the cions or buds, and graft them on some inferior stalks, and my word for it, they would be well paid for their trouble. W. H. Jessup.

San Francisco, Jan. 29, 1876.

Editorial Gleanings.

Patchouly.—The San Luis Obispo *Tribune* says: "Our readers are all acquainted with the delicate perfume known as 'Patchouly,' but few know from what it is made and where it comes from. It is the essential oil from the seeds of a plant, native of India, known as *Pogostemon Patchouly*. Owing to the scarcity of seeds in the Parisian markets, samples were sent to Mr. Kastan, in Acapulco, Mexico, for the purpose of introducing its culture there, as it was believed that the climate so nearly resembled that of India it would thrive as well as on its native soil, and thus increase the supply. Mr. L. Kastan, who was at that time a resident of Acapulco, in the employ of his father's house, put some seeds in his trunk to perfume its contents. Last year, after the lapse of two years, he came across these seeds, and gave them to Mr. Pepperman to plant, as an experiment. Mr. Pepperman divided the seeds with us, and we succeeded in raising three plants, which, though planted late, have made a good growth and ripened about an ounce of seed which have the same rich odor as the old stock. From this experiment we are satisfied that Patchouly may be cultivated profitably in almost any part of California."

The Flora of Greenland.—The valleys and gorges of Disco, especially the Lyngmarken and the shores of Englesmander's Havn, in their gay summer clothing of mosses and wild flowers, furnish an excellent example of the flora of both north and south Greenland—of the plants which will become familiar to the explorers further north, and of the less hardy species which do not occur beyond this parallel. Of the 206 species which compose the Arctic Greenland flora, upward of two-thirds were collected by the officers of the expedition round Godhavn. The vegetation covers the ground in thick masses, forming turf on the level places, while it fills the chinks and crannies of the rocks and creeps over the surface of the stones, giving a very bright appearance to the near view of this land of Disco in summer. The prettiest thing of all and the most abundant is the Club Moss (*Cassiope tetragona*), with its graceful little white bellflowers, like miniature Lilies of the Valley. With it are generally the Dwarf Willows and Birches, and the Vaccinium with its red flower and glossy little leaves. But for the plague of mosquitoes those lovely Mosses would form soft and most luxurious beds. The Alchemillas, the Angelicas, and Whortleberries in the Lyngmarken, and the rich masses of Holy Fern in Englishman's Bay, will not be seen further north. Quantities of red snow were also found on the heights above Godhavn, and specimens were carefully collected and preserved. Here, too, were the salad-supplying plants, the

Sorrell and Scurvy Grass, and many others. The herbaria formed at Godhavn will doubtless be most useful to the explorers.—*Garden.*

Double Balsams. — How to secure Double Balsams year after year, from our own seeds, is a question that has been well discussed, though by no means determined. Let our flowers bloom ever so double one season, the seeds saved from them or from those that mature seeds will, as a rule, prove single, or but semi-double, the succeding year.

It is generally supposed that *age* in Balsam-seeds is conducive to the transformation of stamens into petals. A trial of our own during the present summer does not tend to corroborate this opinion. The seeds were saved five years ago from the strain known as Smith's Prize, and planted beside the same strain purchased last spring—the latter noticeably superior.

It is a common error, however, in collecting seeds, to select those pods which contain the greatest number. The fully double flowers, in which both pistils and stamens have expanded into petals, are of course sterile. But the *nearly* double flowers often form one and two seeds, usually small and shriveled, and these are the very ones we should collect, though by their imperfect appearance the very first to be rejected as worthless.

We have also noticed that a strong, healthy germination of the seeds, which would seem to favor a perfection of flowers, is not always conducive to that multiplication of the petals which in the Balsam is justly considered its chief beauty. On the contrary, drawn, sickly young plants, which we judged might better have been thrown away, produced the largest, fullest inflorescence.—*Rural New Yorker.*

Olives.—In the Balearic Islands, where the cultivation appears to the eye to be so general, one-third of the land actually remains uncultivated. In these islands rather more than 26,838 hectares are occupied in the growth of olives. The olea-tree, upon which the olive is grown, originally grows wild in the mountain-land as a shrub, producing a fruit which bears no oil. When brought under cultivation, grafting is practiced. The ancient historians of Majorca recount that in olden times the olive was unknown in the Balearic Islands, and that the art of grafting was taught to the islanders by the Carthaginians. By the appearance, however, of some of the enormous and ancient-looking olive-trees to be seen now in Majorca, one would be tempted to believe that their existence dates as far back as the period to which the historian refers. An intelligent Majorcan farmer, being asked by Consul Bidwell how old he thought some of these trees were, replied, "I believe they may well date from the time of the flood." It is a remarkable feature in the growth of these magnificent trees that one seldom or never sees two alike. Almost all, in the course of time, assume most grotesque forms; and upon old trees whose trunks are rent open and torn into half a dozen shreds is often to be seen the finest crop of fruit, while in Majorca they have in some places attained proportions akin to those of the forest-trees of the tropics.

How to Gather Cider Apples.—Get twenty-four yards of the best drilling, as it is the cheapest in the long run. Cut into eight equal pieces; these will be nine feet long. Cut each piece obliquely from end to end, starting four inches from one corner and coming out the same distance from the opposite

corner at the other end. You will now have sixteen pieces, each thirty-two inches wide at one and four inches wide at the other end. Put the wide ends together, sew the strips together, hem the edges around the small hole in the center, bind the outer edge well, and fasten small stout cords at each of the sixteen corners. It is now ready for use. With these small cords tie it to the lower branches of the Apple-tree, wherever it is convenient. The tension you give in tying will determine the sag in the center so that you can accommodate it to the height of the lower branches from the ground. Drive the wagon under it, and shake all the branches immediately over the canvas. As the apples roll into the wagon a boy can easily pick out stems and leaves. When one side of the tree is finished, the canvas is moved to another. In this way the apples are all in the wagon when the shaking is done, except a few that drop outside of the canvas. If preferred the apples can be delivered in a basket, and then emptied into the wagon. Such a device saves half the labor of gathering apples, and if well made of good material will last for years.—*Ohio Farmer.*

Potato Farming.—In the early years of this State an idea prevailed that the potato could only be raised about Bodega and in a few other sea-coast localities. Experience has dissipated this fallacy. Potatoes as good as those of Bodega are now produced in the foothills, and as far up in the Sierra as an altitude of 3,500 feet. They need only water to attain their utmost excellence and most abundant yield wherever they are planted. One tule farmer this year has realized $200 per acre on his potato crop, and many others have done nearly as well. In the sage deserts of Nevada, where a few years ago it was thought no vegetable life could fructify, they are now turning out immense crops of this Irish staple of life, and of a quality equal to any in the market or in the world. The only requirement is water to irrigate the plant until the tuber has fairly formed. The demand is this season equal to the supply, and prices are high enough to pay well for cultivation. The small farmer who has ten or a dozen acres in potatoes realizes as much clear profit as his more pretentious neighbor, who has 160 acres in wheat, with this advantage of the wheat farmer, that his crop of potatoes is sure, while the wheat crop is liable to many contingencies that cannot be foreseen nor provided against.

A New Process for "Aging" Whisky.—For some time it has been quite an object to discover some way to age whisky; that is to secure the evaporation of fusil oil in the natural whisky, so that the test grade of liquor could be reached. Under ordinary arrangements whisky requires an age of five years to lose all its fusil oil character. It has been discovered that the shipment of whisky by sea accomplishes in a brief period the required evaporation. The constant motion imparted to the liquor by the rolling of the vessel has always had the effect of rapidly hastening the evaporation of fusil oil, so that a brief voyage enhances the market value of whisky to a remarkable degree. A process has been patented for securing this motion to the whisky while lying in warehouses. A churn is introduced into the barrels with their bungs out, while machinery, propelled by steam, animates the churn and causes continued stirring of the whisky. A short time of this process, it is claimed, materially ages the whisky.

A question has arisen before the Internal Revenue Department as to whether this process does not come under the head of rectifying. If it does the whisky so aged will have to go on the market with a rectifier's stamp on.

Management of Window Plants.—The *Horticulturist* quotes the remark of J. E. Feast, of Baltimore, on the management of house plants, of which the following are the leading points: Place the plants as near the glass as practicable, to get plenty of light. Windows facing the south are best. Judicious watering is the most important requisite. In winter keep the plants, not then growing, rather dry. Increase the moisture in spring, with the increase of the sun's power, and the advancement in growth. In summer, water plentifully; decrease as cold weather approaches. Never water a plant without it is dry, and then water thoroughly, so that the soil may get wet through. Empty refuse water from the saucers, give plenty of air on every fine day, and avoid draughts. Screen the plants from the dry air and dust of the room by a curtain or inside window. Syringe whenever dust is deposited.

John Barleycorn.—The statement has been made and reiterated in these columns that California needs only time—and that not of a century's duration—to become one of the great world-centres of produce and supply, and every day we learn of some event in commercial circles that bears out and supports the statement. Distance has now become a question of such secondary consideration that it will not surprise any one of our readers to learn that a large brewery firm in Glasgow, Scotland, should send so far as California for its barley; but it is nevertheless a matter of importance and congratulation. This firm, one of the largest in the industrial capital of Scotland, has, after a series of steady and extensive trials, come to the conclusion that for malt there is no barley in the world to equal the full, heavy grain of California fields. It is of course highly satisfactory to secure such an indorsement, although proof of the splendid brewing qualities of California barley has been furnished for some time past here in San Francisco, where ale and beer is now manufactured by half a dozen firms, of such a quality as even to wean the exiled Britisher, to a great extent, from his thirst after the hale beverages of the "old country."—*Chronicle.*

The Love of Flowers.—A lady correspondent of the *New York Times* makes the following appeal for encouragement from the liege lords of the fairer portion of God's creation in the rearing of flowers. The appeal is equally applicable to these regions. She says:

"In your paper I read a communication from Mr. John B. Sands, stating he loved flowers for their adornments, and thought every home ought to have them. I think every true lover of flowers ought to extend him the right hand of fellowship, that we have one man who will say he loves flowers because they are ornamental. As a rule they think they look very nice, but it takes so much time to keep them so. I consider them a cheap luxury, one I can not afford to be without. They are lessons of themselves, teaching us the goodness of our Creator in placing so much here to please the eye, as well as nourishment for the body. All ladies are lovers of flowers, as you can well attest by looking at bonnets, hats, etc., of the present time. I think if we

could have a little help from the gentleman side of the house many homes would look more inviting, and many of us (if our hands are browned) rejoice that we have such flowers to cheer us. Come in the ranks, men, boys, one and all, that you may watch the opening buds and take pride in our great flower-beds. See how much happier you will be for a few hours' work, and how much higher will be your aspirations."

The Natural Age of Fruit Trees.—It seems to be the common belief that there is no limit to the natural age of Apple-trees. But this is certainly a mistake. We all know that the Peach-tree usually fails to be profitable at 12 to 15 years of age, and the Cherry and Plum average only 20 to 30 years; the Pear, in favorable circumstances, 40 to 50 years—in rare cases a much longer time. So, also, the Apple-tree has its natural limit, and although, like man's life, the duration of the period of health and vigor varies greatly, according to constitution, nurture, climate, etc., its approaching termination is clearly indicated by signs of debility and disease. On very deep and favorable soils, and where the trees are not damaged by severity of climate, Apple orchards are occasionally found bearing fair crops of fruit at 80 to 100 years of age, but these are nearly as rare as for their owners to live so long. Very few farms have soil of the best kind for an orchard, and everywhere our climate is either too warm, or at times too cold, for the best health of the trees. Injury by severe cold, blackening all the wood, except as new growth is formed, I am convinced is a very common cause of the premature failure of orchards; but starvation, in consequence of exhaustion of the soil, is still more common, and this is a more difficult matter to remedy than most people suppose, especially when trees have attained to a size for the full bearing of fruit.

Value of Trees in Towns.—Mr Griffiths, the medical officer of health for Sheffield, England, in his report upon the sanitary condition of that town during 1874, makes the following interesting remarks in reference to street trees: "In the formation of new streets, and on the eve of the contemplated widening and alteration of old ones, it is to be hoped that an effort may be made to provide for the planting and establishment of trees wherever practicable. The pleasing appearance of verdure in summer, and the agreeableness of the shade afforded by the foliage to pedestrians, are benefits to the inhabitants well worth the effort and cost. Whoever has visited the boulevards of continental towns, or even the squares of London, can testify to the advantage of verdure as offering pleasure to the eye and gratification to the mind. Moreover, from a sanitary point of view, the benefits are of incalculable value. It has been asserted that the aggregate surfaces of the leaves of well-grown Elms, Limes, and Sycamore trees, with their 6,000,000 to 7,000,000 leaves, equal about 2,000,000 square feet, or about five acres; and these are almost constantly absorbing and digesting the carbonic acid and various exhalations given off by the putrefaction of animal and vegetable matter, and, as if grateful for such support, return into the air pure oxygen, which reinvigorates and renews animal life. Trees thus remove poison from our midst, and to be without them is an oversight. Trees can be had which will exist, with suitable attention, in any part of the city. Why not, with all the above facts before us, have them and try them?"

Wonderful Fruit Trees.—The Grass Valley *Union* says: "We have read frequently of late about fruit trees in this part of the State that have borne the second crop. Ben. Taylor, who has a fine orchard in the west end of town, has some trees that can beat all those second-crop trees. He has a Bartlett pear tree that ripened a first crop this year, and that first crop has been gathered and eaten. The second crop is now ripe and ready to be gathered; the third crop is almost ripe; the fourth crop of pears is but little smaller than the third; the fifth is getting along finely, and the sixth and seventh crops show their regular graduations of size in fruit, while the tree is blooming for the eighth crop. We have in our office a bough from the tree which shows distinctly the eight crops, excepting, of course, the first. Mr. Taylor has also an apple tree which has done something this year in the way of bearing crops. A small twig in our possession shows a fine ripe apple, any number of small apples about one-third grown, and a number of blooms for a third crop. But the pear tree beats anything we have seen in the line of prolific bearing."

Sandal-wood.—The Sandal-wood out of which so many fans are made, and which is so much used on account of its strong scent, comes from a tree that attains maturity in about twenty-five years. The older the tree, the nearer the heart-wood comes to the surface, while the bark becomes deeply wrinkled, is red underneath, and frequently bursts, disclosing in old specimens the absence of all sapwood. Such trees, whatever their size may be, should at once be felled, as they rapidly deteriorate. The heart-wood is hard and heavy. The best parts are used for carving boxes, album-covers, desks, and other useful and ornamental articles. The roots, which are the richest in oil, and the chips go to the still, while Hindoos who can afford it show their wealth and their respect for their departed relatives by adding sticks of sandal-wood to the funeral pile. The wood, either in powder or rubbed up into a paste, is employed by all Brahmins in their pigments used in their distinguishing caste marks. The oil forms the basis of many scents, and is sometimes used for impregnating with its scent articles which, being really carved with common wood, are passed off as if made from true sandal.

The New England Elms.—Now and then Nature asserts herself, and does something so astonishing and overpowering as actually to strike through the crust of human stupidity, and convince mankind that a tree is something greater than they are. As a general thing the human race has a stupid hatred of trees. They embrace every chance to cut them down. They have no idea of their fitness for anything but firewood or fruit-bearing. But a great cathedral elm, with shadowy aisles of boughs, its choir of whispering winds and chanting birds, its hush and solemnity and majestic grandeur, actually conquers the dull human race and asserts its right to be in a manner to which all hearts respond; and so the great elms of New England have got to be regarded with a sort of pride among her very few crown jewels. —*Mrs. Stowe.*

Extermination of Thistles.—The Berlin correspondent of *Land and Water* published a piece of information that will be welcome to many a farmer. "Who ever knew," says he, "of two plants being so inimical to one another as one to kill the other by a mere touch?

This, however, seems to be the case when rape grows near the thistle. If a field is infested by thistles give it a turn of rape seed, and this plant will altogether starve, suffocate, and chill the thistles out of existence. A trial was made with different varieties of rape seeds in square plots, when it was found that the whole ground was full of thistles, and nobody believed that the rape was having a fair run. But it had, and as it grew, the thistles vanished, faded, turned gray, and dried up as soon as the rape leaves began to touch it. Other trials were then made in flower pots and garden beds, and the thistles always had to give in, and were altogether annihilated, whether old and fully developed, or young and tender."

The Art of Skeletonizing Leaves. — The subject having excited a little interest among some horticulturists lately, owing to the exhibition of very beautifully executed examples at some of the large provincial exhibitions held in the northern and midland counties of England, I took the liberty of appealing to a lady friend, who has been very successful as a skeletonizer of foliage, requesting her to favor me with the *modus operandi* by which she produces her specimens with such perfect completeness. My informant states at the outset that the art of skeletonizing leaves and flowers would be found much less difficult of accomplishment were the nature and character of the various plants thoroughly studied at first. This is, no doubt, a very important matter. For instance, it would be but a poor direction to the learner to say: "Gather the leaves on a certain day," unless proper attention be also paid to the leaves chosen. They must have reached a certain degree of maturity, neither too old nor too young; and as all leaves do not reach this point at the same time, it is obvious that care must be taken that each kind must be gathered when fit for use. The leaves of the magnolia, for instance, may be gathered when the plant is in bloom, varying in time from June until August. They will require from a month to six weeks' time to be well immersed, and so be easy to dissect, as the fibre is so strong. The leaves of the ivy rank among the most difficult, and, because of the peculiar beauty of the fibre, will amply repay the trouble involved in the preparation. These may be immersed from the beginning of May to October, but should be leaves of the previous year's growth. All leaves will not answer for dissecting, but those that have been most successfully operated on are from the magnolia, ivy, pear, rose, holly, orange, poplar, willow, elm, lime, service tree, Spanish and horse chestnuts, and the oak. The leaves of the last-named should not, however, be put into the same vessel with the others, as it affects them in an undesirable manner. Seed vessels may also be dissected in an admirable manner; such as those of the stramonium, winter cherry, poppy, etc. To procure good specimens, put the leaves into a deep jar, and cover them with soft water, which must not be changed; the jar is then to be put into a cool place. When, upon examination, the leaves are found to be quite soft, they must be carefully brushed in a weak solution of chloride of lime for a short time, to whiten the fibre, and afterward washed well in two or three waters, and dried carefully between sheets of blotting paper or linen; after which they are ready for mounting. To make stems for this purpose, thread, stiffened with gum, is most useful, and it has a natural appearance. The leaves may be formed into bouquets or wreaths,

according to the taste of the operator, and should be placed under glass shades to preserve them from harm. I have seen groups of leaves so prepared, that formed most acceptable table ornaments in sitting and drawing-rooms; and it suggests a pleasant employment for the fair sex, with which to fill up moments of leisure. It is evident that much nice discrimination in the selection of the right leaves is required; and a light and careful manipulation is also essential; and in the case of failure from a first attempt, no small amount of patience is needed to carry the operator through to ultimate success.—*R. D., in Land and Water.*

Osage Orange as a Fence.—First, the ground should be well prepared before setting the plants. If the ground is soddy or very trashy, it should be plowed in the fall. If plowed only in the spring, it will be impossible to get it in a suitable condition. The better the ground is prepared, the better will be the growth of the plants. As soon as the ground is perfectly settled in the spring and well prepared, the plants ought to be set out. It is too often the case that it is neglected till as late as May; and by that time dry weather sets in, and the plants die for the want of moisture. There are different opinions about the manner of setting out plants. In order to make a complete and neat fence, the plants should be set close; not farther apart than six inches, and four inches apart is close enough; but six will do. It is very necessary to procure fresh, vigorous plants, of one year's growth. Plants that have been out of the ground all winter, are not fit to set out, for many of them are nearly dead and will not grow. A hedge row is like many other things, the better they are cultivated, the better and thriftier they will grow—the first year in particular. If they are not cultivated, they will do but little good. There is no use trying to make a hedge fence without proper attention, both in cultivation and pruning. After one year's growth in the row, they should be cut off one inch above the ground, with pruning shears, smooth and neatly, in the spring before the sap begins to flow. The pruning, in its proper season, is one of the most essential things. In order to have vigorous growth, prune in the spring, and so continue, none but spring or winter pruning till the hedge is established at a desired height, and ever after prune in June and August, which prevents the rank growth, and causes a thick, bushy top; but if pruned in the summer before it reaches its established height, it forms a dwarf too soon. If there are no vacancies in the row, a complete fence can be established in three or four years. The second spring they should be cut off about three inches above the ground; and the third spring the thickness of the hedge should test the matter. If this treatment is strictly followed, we will warrant a good fence. This information has required several years experience. An old hedge, fifteen feet high, can be made a good fence, by this treatment, after cutting it down close to the ground.

House Plants do the best in rather cool rooms, or at a temperature not so high as 60°. This is the reason that we often see finer plants in the cottages of the mechanic and laboring man, than in the warm, furnace-heated mansion of the rich. In the latter, however, much improvement may be made by keeping the air-chamber of the furnace abundantly and constantly supplied with evaporating water—at least eight or ten gallons daily for a medium-sized furnace;

and if the plants still appear to suffer from dry air, hang wet napkins over them. If this attention cannot be given, the plants should be selected from such sorts as grow naturally in dry climates, such as the Cactus, Sedum, etc. House plants are often injured by the accumulation of dust in sweeping, which may be partly remedied by sprinkling, but more easily by placing large funnels of tissue paper inverted over the plants till the dust settles. Tissue paper is best, on account of its little weight on the plants.

The Best Sweet Corn.—Every season we plant two or three varieties of sweet corn, some for early and the Stowell's Evergreen for late use. The variety which gives most satisfaction is one sent out by the Agricultural Department some years ago, under the name of "Brill's Early Extra Sweet." It is much sweeter and tenderer than any other variety we have used, and quite early. We have had it ready for eating sixty days from planting. The ears are good size for so early a variety, and the corn so sweet that it makes even so good a kind as Stowell's Evergreen seem almost tasteless. We have almost concluded that successful plantings of this best kind will prove more profitable than trying to grow early and late varieties for use through the season.

The Catalpa. — This familiar tree, says Landreth's *Rural Register*, indigenous to the greater portion of the Union, has been long known to a limited number to possess wood of an enduring quality for posts; as lasting, it is claimed, as the black or yellow locust —*Robinia psuedo-acacia*—but, fortunately unlike it, exempt from insect attack. Indeed, so far as our observation has extended, it is not liable to disease direct or consequential; and as the tree grows readily from seed, there need be no impediment in propagating it to any extent desired. Fence rows, boundaries, lanes, the roadside, impracticable plats of ground, inaccessible knolls, might each be seized upon for planting this useful and ornamental tree. The labor in doing so will be well repaid.

A new variety of Peach, called the Chinese Cling, has been introduced in Napa from Tennessee, and several small lots of Cranberry plants have been set out in reclaimed swamp lands.

METEOROLOGICAL RECORD,

For the Month ending January 31, 1876.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.11 in.
do	12 M.	30.10
do	3 P. M.	30.09
do	6 P. M.	30.08
Highest point on the 29th at 9 A.M. and 12 M.		30.39
Lowest point on the 6th at 6 P.M.		29.64

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		46°
do	12 M.	51°
do	3 P. M.	52°
do	6 P. M.	48°
Highest point on the 5th at 12 M.		58°
Lowest point on the 21st at 6 P. M.		38°

SELF-REGISTERING THERMOMETER.

Mean height during the night	40°
Highest point at sunrise on the 5th	47°
Lowest point at sunrise on the 21st	31°

WINDS.

North and north-east on 14 days; south-east and south-west on 15 days; west on 2 days.

WEATHER.

Clear all day 8 days; cloudy all day 15 days; variable on 8 days; rain on 14 days.

RAIN GAUGE.	Inches.
1st	0.12
2d	0.30
3d	1.40
4th	0.21
6th	0.53
7th	0.87
8th	0.01
19th	0.26
20th	0.08
22d	0.47
23d	1.73
24th	0.15
26th	0.27
30th	0.01
Total	6.41
Previously reported	10.03
Total for the season	16.44

California Sporting and Harvest Scene.

California Camping-out Scene.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. VI. SAN FRANCISCO, MARCH, 1876. No. 3.

YUCCA AND ALOE LILIES.

BY DR. A. KELLOGG.

These denizens of the sandy desert, and picturesque ornaments of the otherwise barren and almost inaccessible rocky crags, are at length, in some degree, as they ought, enlisting public attention. Let us view them first as æsthetic objects of interest or ornamentation, and then consider briefly their claims in the lower region of every-day use, or in the gross. We have neither time nor space to dwell at length upon the merits of this stately, palm-like, and tropical looking vegetation. Suffice it to say, they furnish conspicuous and charming ornaments to rural retreats, absolutely requiring but little special care. Though grateful in growth and bounteous in blossom, like all things beneath the sun when wisely cherished and duly cared for, yet they may be always deemed by nature the hardy sons of the desert. No burning sun bleaches, nor drought destroys them; frosts and storms disturb not, the fierce winds fret not their rigid foliage. Trim as an outpost sentinel, they stand firm and true to the flag against the vandal sands of desert or sea-shore, or the driving dunes that threaten to bury all things beneath the billows of desolation.

These "Bayonet" plants are the natural advance picket-guards of civilization and settlement; shelterers, reformers, and pioneers, prophetic of the sylvan scenery of the landscape that is to follow their footsteps; they are the charmed harmonizers and mediators between such scenery, through and side by side with *Sedums* and *Cacti*, to the more delicate and tender floral decorations of lawns and gardens. They delight in the glare of sunshine. They seem at home camped on any soil; they only ask an open and fair field for their arms; they will also defy dust and smoke, and dwell in cities, or along the highways of men. As they have no very strong hold on the soil, they are neither aggressive in root, nor is the top over shadowing. They may therefore be placed close in near the boundary of plants requiring continual and careful culture; or, like good policemen, they may be judiciously distributed among the society of the most useful and ornamental sorts of their community.

To review these as fibre-plants alone would be to write a voluminous treatise.

They will ere long be adequately utilized for clothing, cordage, paper, etc. Mr. Walker, of Los Angeles, we see, is starting a paper-mill at the Mohave Desert, for making note, news, and other papers of these Bayonet plants. We trust all such new enterprises may prove successful.

Short-leafed Yucca (*Yucca brevifolia* Eng.) — This tree-like species, in its ultimate floral growth, or final expansion into its flowering state, attains from ten to thirty feet in height by eight inches to two feet in diameter; bark thick and rough; branches three to six feet in length, the short narrow dagger-like leaves crowded at the ends of these branches; edges of leaves finely saw-toothed, a straight-line taper from base to point; masses of white, nodding, lily-like flowers close set at the ends of the branches. At first this plant has only a radiated cluster of short root-leaves of from four to six inches, so that it occupies but a small space of ground. This will prove one of the most ornamental and desirable species. The fibre is said to be fine as silk and very strong, readily taking the aniline colors. This class of liliaceous or aloetical plants very providently store up their treasures of starch and sugar to a very large amount, preparatory to their conjugal and convivial day of blossom and of fruit, which, for the most part, is every other year; yet some march patiently onward to great Sabbatical seasons of jubilee, or epochs of centennial joy and gladness.

The very large, vigorous, and tender flower-stem buds are often cut off at an early period of growth, and roasted or boiled, by the native red rover of the desert, as a delicious dish. Dr. Palmer has observed that this plant, having once set its heart on blooming, is not so easily baulked by the hand of man. Being decapitated, the parent plant bequeathes the acquired fortune to the eldest plantlet previously provided for an emergency, and the heir-apparent takes up and carries out the last will and testament of the departing or dead parent, prematurely blooming in its stead.

Besides viewing these Bayonet-trees and plants as boundary or border vegetation, verging toward the last limits of vegetable life on the desert, a word might be expected as to their medical use. The Aloes furnish one of our most important purgative and tonic resinous drugs. The seed-vessels of Yuccas are also purgatives and somewhat diuretic. The mucilaginous and starchy quality is often combined with a *finale* of more permanent pungency or expectorant property, like the common Soap-root. In medical effect, this deobstruent action closely allies them with the renowned Sarsaparilla.

TREES REMARKABLE FOR THEIR GIGANTIC GROWTH AND GREAT AGE.

BY A BOTANIST.

Every country possesses these vegetable giants, and this, too, from the most different groups of trees. India has its Banyan; Africa, its Baobab; Germany, its Linden; England, its ancient Oaks and Yews; and California, its magnificent mammoth trees and Redwoods which belong to the natural order Coniferæ, and the former of which are upward of 300 feet in height.

A Chestnut tree is now growing on the side of Mount Ætna, in Sicily, the stem of which is hollow, and 180 feet in circumference. It consists, in reality, of several stems which have grown together at their base, and whose crowns are concealed within one another. It

is called by the natives "Castagna di cento cavalla," because a hundred horsemen can find shelter in its interior. The age of this tree is unknown, but its immense size proves its great antiquity. It is indeed a noble tree, which has outlived and sheltered many successive generations.

By Neustadt, in the kingdom of Wurtemburg, in Germany, stands a Linden tree, which must have been very old in 1229; for an old tradition says that the city, which was formerly called Helmbundt, was destroyed in 1226, and was again rebuilt in 1229 *near the great Linden.* This Linden was so remarkable and well known, that for centuries the Germans were accustomed to speak of Neustadt as the city "near the great Linden." In a poem written in 1408, it is described as growing near the gate of the city, its branches being supported by sixty-seven pillars. In the year 1664 there were eighty-two, and in 1832, 106 of them. They were built of stone, and erected just as they were required, in accordance with the increase in the horizontal growth of the branches. The oldest inscriptions on these pillars bear the respective dates of 1558, 1562, and 1583, with the name and escutcheons of those who erected them. In the year 1832, the stem of this tree was, at the height of 6 feet above the ground, 37 feet 6 inches in circumference. It must, therefore, have been from 750 to 800 years old, at the lowest estimate. Since 1832, it has suffered so much by tempests that it is now almost, comparatively speaking, a complete ruin.

Walnut trees, also, occasionally reach a great age. There is one in the Baidar Valley, near Balaklava, in the Crimea, which is at least 1,000 years old. It yields annually from 80,000 to 100,000 nuts, and belongs to five Tartar families, who share its produce equally between them.

Cedars are yet found on Mount Lebanon, in Syria, supposed to be the remains of the forest which furnished Solomon with timber for the Jewish Temple 3,000 years ago. They were examined by Belonius in 1550, who found them twenty-eight in number. In 1696, Maundrell counted only sixteen; and in 1818, according to Dr. Richardson, there were still seven of them left. There can be no doubt as to the great age of these trees. Maundrell mentions the size of one of them, which was 30 feet 6 inches in circumference, and 117 feet in the spread of its boughs.

There are Oaks now growing in England, which were planted before the time of the Norman conquest, in 1066, and which are therefore more than 800 years old.

The Yew-trees (*Taxus baccata*) are still older. One of these trees, located at Fountain's Abbey, near Ripon, in Yorkshire, was examined by Pennant, in 1770, and was then more than 1,200 years old; and another, in the churchyard of Braburn, in Kent, according to the measurement of Evelyn, in 1660, had then attained an age of 2820 years, and consequently, is now more than 3,000 years old.

The so-called American Cypress (*Taxodium distichum*) found in Florida, in southern Louisiana, and in Mexico, has not unfrequently, at a height of 120 feet above the ground, a circumference of 40 feet, and must, therefore, be very old. A fine specimen of this tree now grows in the garden of Chepultepec, Mexico, which was of immense size at the time of the conquest of Mexico by the Spaniards, in 1520, and was then known as Montezuma's Cypress; and in the province of Oaxaca, in the same

country, still stands the same Cypress which sheltered the troops of Ferdinand Cortez. These trees are at least 4,000 years old; in fact, de Candolle considers them to be much older.

But the most remarkable trees, perhaps, in the world are found in California. The *Sequoia gigantea*, popularly known in the district where it grows as the "Mammoth Washington Tree," was first discovered by the English traveler and naturalist, Lob, on the Sierra Nevada, at an elevation of 5,000 feet, and near the source of the Stanislaus and San Antonio rivers, although a hunter discovered the Calaveras trees. These trees belong to the natural order *Coniferæ*, or the Pine family, and grow 250 and even 400 feet in height. The bark, which is of cinnamon color, is from 12 to 18 inches thick; the wood reddish but soft and light; and the stem is from 10 to 20 feet in diameter. The branches grow almost horizontally from the stem; their foliage resembles that of the Cypress; yet notwithstanding the monstrous size of these trees, their cones are only two inches and a half in length, resembling those of the Weymouth Pine (*Pinus strobus*); while the Auracauria or South American, although far inferior in size to the *Sequoia*, produces cones of the form and magnitude of a child's head.

But the Baobab (*Adansonia digitata*) surpasses even the trees of California in grandeur and antiquity. It is the oldest vegetable monument on earth. Its stem is only from 10 to 12 feet in height, but of immense proportions, for it is 34 feet in diameter. Its colossal circumference is an absolute necessity, because, from its summit it unfolds so vast a leaf-crown that it can only be supported on such a massive foundation. The main branch rises perpendicularly to a height of 60 feet, and from it branches extend themselves to a distance of from 50 to 60 feet horizontally on all sides; so that they form a noble leaf-crown, whose diameter is more than 160 feet, giving to a single tree the appearance of a whole forest. The leaves of the Baobab are palmate, and forcibly remind us of the Horse-chestnut—being divided to the leaf-stalk. It is covered with malvaceous-like flowers, which droop on their peduncles. The fruit is about the size of a small gourd.

Although some trees live for thousands of years, yet the life of all must sooner or later terminate, for to each tree, equally with the lowly plants which grow beneath its shade, a limited period of life has been allotted. This period may vary with the favorable or unfavorable circumstances in which the tree is placed, and depends also on the greater or less amount of life-force with which the embryo was endowed in the beginning; but, nevertheless, the life of all trees has its appointed period, like their forms, altitudes, and other specific peculiarities.

The following catalogue of trees will show how the age of the same tree may vary: The Palm lives from 200 to 300 years; Larch (*Larix Europea*), from 263 to 576 years; Chestnut (*Castanea vesca*), from 360 to 626 years; Walnut (*Juglans regia*), from 900 to 1,000 years; Olive (*Olea Europea*), from 700, 1,000 to 2,000 years; Orange (*Citrus orantiicum*), from 400, 509 to 646 years; Yew (*Taxus baccata*), from 1,466, 2,588 to 2,880 years; Oak (*Quercus Europea*), from 860, 1,000 to 1,400 years.

To Detect Leaks in Gas Pipes.—Apply soapsuds to the suspected leaky joint. The formation of bubbles will show any escape. This is safer than trying the joint with a lighted match.

THE SECRETS OF ANGLING.

BY PISCATOR.

Long and attentive practice in fishing, as in any other art, will enable a person to offer some valuable hints in connection with that, to those who have only partially but yet lovingly entered into it, most fascinating sport and amusement. We therefore propose in this article to impart some knowledge which may, at any rate, be useful to beginners, if not to the more experienced in the craft. We will first speak of the reel, so necessary an appendage to the rod that it is not worth while to dilate upon its advantages. There can be no doubt that the common pillar-reel for all ordinary purposes, either for trout or salmon fishing, is very good, and if made narrow in width, broad in diameter, thick in the axle, and with a friction-plate interposed between the drum of the reel and the end plate, is one of the safest and most efficient for general use. The click-reel is that kind which emits a rattling noise, either when the line is paid out or wound in. This reel when new and well finished is certainly a very neat piece of apparatus, but in time it is apt to wear in its working and may stop altogether. There is a reel called the Meek—the name of the maker, at Frankfort, Ky.—which is an admirable piece of mechanism, the inside works of the finest and best steel, the outside of excellent German silver, and a fourfold multiplier, and good for all purposes, but especially bass fishing. It is, perhaps, the most expensive of all reels, but it will last probably much longer than a life-time. Another reel lately come out is the Orvis reel. This is extra nickel-plated and finely finished; is perforated with holes, to make it light and keep it free from sand; also that these perforations may have somewhat of the effect to keep the line dry without the absolute necessity, though we think it would be always better, of removing it from the reel after use. It has certainly a very perfect click. It is very light, seems strong, and would be well adapted, we think, especially for a one-handled light fly-fishing rod, and it holds forty to fifty yards of line. It is certainly more compact and less cumbersome than ordinary twenty or thirty-yard reels. It is quite narrow, and takes up line pretty rapidly. The common pillar-reels are made of different materials, as rubber, brass, and steel, and are only moderately expensive. The stop-reel—we would rather call it the stop sport reel—is provided with a small lever working horizontally, one end of which projects beyond the circumference of the plate at one end, and is held in a notch in the plate by a spring, when the reel is locked; while the other catches into the teeth of a small wheel upon the end of the barrel, when the action of the reel is completely suspended. On releasing the lever from the notch, and pushing it to the opposite side, it is again allowed to act. We regard this sort of reel as scarcely worth notice, were it not for the purpose of warning others from risking both their sport and reputation by the use of such a bauble. We can easily imagine the plight of some unlucky brother furnished with one of these mischievously ingenious pieces of mechanism, who has unwittingly placed the stop in the lock, and rendered his reel motionless as a mooring-post, when suddenly, a walloping Tahoe trout, or a five-pound grilse or an old salmon takes it into his head to appropriate the bait or fly, but not by any means relishing the pungency of its flavor (as some wise-acre has remarked, fish in general preferring baits or flies without stings) it

darts full down stream, followed, no doubt, by our disconcerted friend as fast as legs can carry him, while, perhaps, he has neither time nor presence of mind to release the unfortunate stop; until splash, dash goes the fish, crash goes the rod, flash goes the line, and "pop goes the weasel," all owing to the ill-fated stop. This is no fiction. This has never happened to the writer, because he has never used so dangerous a man-trap. But we once witnessed an instance of this mishap in another angler, and doubtless it has occurred to some others who have used this kind of reel. Many and hearty have been the wishes, without doubt, that the daily viands of the inventor of this provoking piece of mechanism were duly seasoned with a mixture of cayenne pepper, wasp stings, and fish-hooks. The narrow reels are always the best, for the reason that in winding in the line very fast, which is very necessary when a large and strong fish runs into you, it may not overlie, and so be stopped when the fish rushes out again from you. As to lines, we regard those made of hair and silk spun together as decidedly the lightest, strongest, and most durable, although waterproof silk makes also a good one. Those made entirely of hair, require to be too thick and clumsy in dimensions in order to be of the requisite strength. Every reel-line ought to be so gradually tapered for twelve feet from the end, that its termination may not be thicker or heavier than strong salmon-gut, a link of which may be securely whipped to it, having another finer length knotted to it, with a loop at the end to which the fly-line is to be attached; thus dispensing altogether with those abominations called casting-lines, usually interposed between the reel-line and the gut-cast. Gut, both for salmon and trout, should be as round and smooth as wire; and for trout lines it can scarcely be too fine, provided it is round and even. Gut of this description is incredibly strong compared to its dimensions.

The ordinary fish-creel is constructed of basket-work, and is both light and handy; but it has one grave fault, viz., that of allowing the fish to become completely shriveled up and spoiled in dry warm weather. To remedy this, an oil-cloth lining, made to fit the inside of the creel or pannier accurately, to which it may be attached by hooks and eyes, or buttons, will both keep it clear of all filth, and prevent the fish from shriveling in dry weather, while it can be removed and washed after being used.

To the angling tourist who may chance to fall in with different kinds of fish, some of which, as salmon and pike (Sacramento "pike" included), would be too large to be stowed away in an ordinary sized trout-pannier, a waterproof bag made of Mackintosh cloth will be found a much more convenient article than a creel. And if it be divided into two compartments by a longitudinal septum in the middle, it will be found exceedingly useful, not only as a receptacle for fish, but also for a shirt or two, fishing tackle, etc.

At the end of each season it is advisable to revarnish your rod and lay it carefully aside. The following varnish will be found excellent, possessing a strong body, and becoming quickly dry: Gum sanderach, 4 oz.; Pale seed lac, 2 oz.; Gum elemi, 1 oz.; Alcohol, 1 quart. Agitate the gums occasionally till dissolved, and then add Venice Turpentine, 2 oz. If a brown color is desired, add four drams of brown, or two drams of black sealing-wax. Half a dozen coats of shellac dissolved in rectified spirits of wine may also answer the purpose very well, and the addition

of dragon's blood will give it a reddish brown color. Boiled linseed oil may also be used, or a solution of caoutchouc (India rubber) in ether. But they do not look so well as the varnish, although they will equally well protect the wood against damp and insects.

WINDS — STORMS — WEATHER.

BY NATURALIST.

The trade-winds to which our coast is subject form an interesting topic for our consideration, as well as winds and storms in general. With the exception of the parts of the earth and sea subject to the monsoons, which differ from the trade-winds in being periodical and not perennial, and which occupy the place of the trades as regular winds in those portions of the ocean where they occur, the trade-winds are constant and steady, but they do not blow always and everywhere from the same quarter. They are in some places east winds, especially on the western side of the seas they affect. They are also more to be depended on on the western than on the eastern side of an ocean, and are hardly sensible at times, except in the open sea. They are generally stronger in the hemisphere in which the sun is not vertical, and are there also less easterly and more normal in their character. The weather, as we find here on this slope, is almost invariably fine and dry when the trade-winds are blowing. These winds are, as we have said, more distinct in the Atlantic than in the Pacific Ocean. In the former, also, they are wider and more powerful on the more southern American side.

The usual mode in which great storms occur is by circular, or rather by spiral, movements in the great body of the atmosphere, ranging over limited and often very small districts. Our trade-winds in California begin to blow on our coast about May, and continue until October, between which periods the weather is dry for a long distance inland. These winds cannot be said to have at any time the great force of hurricanes, but are sometimes sufficiently powerful to blow down trees, slightly built houses, and fences. The greatest storms of wind, accompanied sometimes but quite rarely with thunder and lightning, occur almost entirely during our rainy season. These strong winds blow mostly from the south, but sometimes we have severe northers. The phenomena of storms are most interesting with us, where the prosperity of the State depends so much on rains. An almost certain prognostic of rain, in our winters chiefly, is the occurrence of three hot days in succession. These three days of heat almost always follow a norther.

As to the indications of winds and weather here, owing to the peculiar form of our coast and the interior ranges of mountains, some near the ocean and others a long distance from it, we can not judge so well of the coming weather, even in our winters, as the inhabitants of many other parts of the world can. Among human weather indicators are our martyrs to rheumatism and neuralgia, those who have felt the racking pain from old and imperfectly healed wounds, those from whom proceeds the dry consumptive cough, and those who suffer from bronchial irritation that no artificial atmosphere can soothe. All the conditions of the air which produce the above and other evident effects in both the animal and vegetable worlds, as well as on weather and winds, are the result of causes which, if clearly understood in their relative importance and mode of action, would be reducible to direct observation and calculation.

They may be described in a few words as being dependent on the pressure of the air, the temperature of the air (not only at the surface, but at various altitudes), the dew-point or state of moisture of the air, the rainfall, the clear or cloudy state of the upper air, the direction of the force of the wind, the electrical state of the air, the presence or absence of ozone, and the magnetic condition of the earth and atmosphere. The first and most important instrument of observation is the barometer. It tells one thing only — namely, the pressure of the air at the moment of observation. It requires frequent and regular notice. If the mercury falls slightly but steadily for many hours, without other indication of change, bad weather will follow, and the longer it is delayed the worse it will be. The thermometer is of great value as a weather indicator, but for this purpose the average temperature of the day at the place of observation must be known. A temperature continued for some time below or above the average is apt to be an indication of change. Over the greater portion of California, during the winter, electric storms follow unusual warmth. Peculiarities of weather, however great and strongly marked, must not, even when they extend over many years, as they have occurred to us here, be assumed to indicate permanent changes of climate. If we look back to former records of weather, we find that at all times years of favorable seasons have succeeded each other until the people began to forget that the contrary might happen; and when the unfavorable time comes, as in our late severe frosts, we are by no means prepared to recognize it as a part of a well marked series of events. But this is certain, that so accurate a knowledge of the laws that govern the winds and weather as to enable us to foretell, especially on this peculiar coast, what will happen some time in advance, is neither common nor easy of acquisition.

OUR MOUNTAIN LANDS.

Various causes have combined to retard the settlement and cultivation of the foot-hills and mountain lands of the State, much of which is of the most productive character. Considerable has been written, but very little is yet known as to the value of the hill land of California. As with the swamps and overflowed lands, the hills were carefully avoided by seekers after homes, under the impression that the returns would not compensate for the labor of cultivating them. Men preferred going back into the interior, away from market, where they could have smooth sailing, rather than use the side-hill plow for cultivating, and the sled in the place of a wheeled vehicle for removing the crops. The scarcity of water has been one of the greatest drawbacks to the settling up of the hills in small farms. While it is true that there is generally plenty of water for stock, consisting commonly of small streams flowing down some large gulch, whose source is a beautiful spring, it is not usually the case that these water supplies are distributed evenly on every 160 acres, and, as a result, the stock raiser who could get possession of the quarter section containing the water course could, without fear of competition, inclose and hold, under the State "possessory title" for unsurveyed lands, a large tract of adjoining land, much of which would be available for agricultural purposes could water be obtained. This law seems to have been passed directly in the interest of land grabbers, as under it they could inclose

a thousand acres or more with a string of brush, called a fence, and keep off actual settlers and tillers.

THE RAILROAD COMPANIES

Have done much to break up these large cattle ranges in the hills within the limits of the grants to them of alternate sections. They had the lands surveyed, and in many instances sold them to settlers, thus cutting up the large ranges and placing the even sections within the reach of pre-emptors and homestead claimants. This has been noticeable in the range of hills lying between the Santa Clara and San Joaquin valleys, and wherever a team of horses can walk green fields of wheat are to be seen in lieu of large droves of cattle or sheep. People coming here from the Western prairies are mute with surprise to see the steep hill-sides and the tops of the high peaks cultivated in grains and other crops. The mode of farming in these hills is somewhat novel. In many places a side-hill plow, consisting of a movable mold-board and double-sided share, is used. The plowman drives along the hill-side, commencing at the bottom and turning the furrow always down hill. At the end of the furrow the team is turned, the mold-board reversed, and the plow still throws the dirt downward. The soil being generally lighter than in the valley a less quantity of seed is required to the acre. In some of these places the ground is so steep that a team can not turn round without danger of falling. The grain is sown and harrowed in, and though the yield is seldom more than twenty bushels to the acre the farmer can depend upon that amount through wet and dry seasons, as it is a rare thing that the crops are affected by drouth. A Kirby reaper, which has but one wheel and a stiff knife, is used, the teams being driven along the side-hill as in plowing. These reapers are used often where it is too steep for the driver to keep his seat, and he is compelled to walk behind. Small sleds with grain racks upon them are used for stacking the grain. These drawbacks of course make the labor of farming almost double what it would be on level land, and yet there is a large number of farms in the hills east of San Jose, as far down as Gilroy and Livermore Valley, whose owners make a comfortable living.

THE RANGE FOR STOCK

In the hills and mountains adjacent, where the land is too rough and precipitous to cultivate, is always abundant in summer, and is free to all. By this means the farmers are enabled to raise quite a number of cattle, pasturing them in the mountains in summer, and turning them into the stubble fields in winter, which, together with the straw, is sufficient to keep them until spring. The hills on the east of the Santa Clara Valley are generally barren of timber, except in the gulches and canyons, where scrub oak abounds. Further back in the mountains near the line of San Joaquin County there is considerable pine, but it is not accessible. It is but a few years since these lands were first surveyed, and now there is scarcely a vacant quarter-section to be found. They are valued at from four to twenty dollars an acre. The sections belonging to the Railroad Company are nearly all bought up, the price being six dollars an acre for unimproved lands. Good fences, made of redwood pickets, inclose most of the land now farmed. Good school facilities are generally to be obtained. On the other side of the Santa Clara Valley are the Santa Cruz Mountains, which embrace soil and timber of a far different character, being covered with

redwood, pine, and oak. They are more precipitous, and there are very few farming tracts to be found. But there are many of the lumbermen who have pleasant little homes on the hillsides, or on some spot of level ground, and almost invariably the comforts and luxuries of fruit, vines, and garden spots surround the rude cottages.

VINEYARDS AND ORCHARDS.

It is only of late years that the full value of the highland soil has been deterimned for grapes and fruit. Vines planted on the hillside produce a far sweeter grape, and more highly-flavored fruits of all kinds are also produced. The peaches which grow far up the hill-sides — even where snow falls in winter—are far superior to those raised on the lowlands. One of the first vineyards of raisin grapes planted on this coast was that of B. V. Bugbey, near Folsom, and it is a noted fact that all the land in that region is of a mineral character, the vineyard being in the very heart of one of the first mining-camps in California. There are small spots in the foothill soils which seem to be peculiarly adapted to the grape, and hence the success of Mr. Bugbey in his experiments of raisin-making. This vineyard is situated in the hills at the very base of the Sierras and within sight of the snow-covered heights. The Fiher Zagos variety is the one that has been most successful in this locality, and Mr. Bugbey is of the opinion that it is the best raisin grape that can be raised in California.

WINE-MAKING.

The entire range of mountains from Shasta to Santa Barbara, wherever it is not too rugged for cultivation, is adapted specially to the growth of grapes suitable for wine-making. The red, volcanic character of the soil seems to produce the very best conditions in the grape for the making of choice wines. In these altitudes the climate is entirely free from extremes of heat and cold in summer, which so often damage or ruin the grape crop in the low lands. It is very seldom that the few vineyards scattered along the hillsides are visited by mildew, to which the choice foreign varieties seem to be especially susceptible. Wines made in the hills have a peculiarly delicate flavor which can not be found anywhere else. If California ever assumes any prominence in the production of sparkling wines, which no doubt she will, she must thank the foot-hills for it. Mr. Bugbey has already proved that champagne of an excellent quality can be made from the grapes in his vineyard, and although he spent a great deal of money experimenting before he finally succeeded, he has now overcome the obstacles and proved that it can be done.

FOOTHILLS FOR NUTS.

From experiments already tried, it is safe to assert that the uplands of this State may be turned to good account by planting nut-bearing trees. The chestnut, the introduction of which into this State has been tried during the past few years, would be a valuable crop, but there are certain conditions of soil and climate necessary to its successful growth, which are not found in the low lands. Wherever the tree has been planted in the valleys, it has proved of little account, seeming to die out and become less vigorous as it grows older. In the Sierra Nevada District, El Dorado County, and also in Placer County, those trees which have been planted have grown and produced a fair yield, and there is no question as to the proposition that the hills are the most suitable for the cultivation of this nut, while almost every kind can be propagated there.

As yet the attention of strangers has not been sufficiently called to the value of lands for homes. The greatest drawback, as has been mentioned, is the unequal supply of water, and while there is plenty for all, it is generally in the shape of small streams running down deep canyons. But in many places, even on the steep mountain sides, water has been found sufficient for household use and the wants of the farm, and whenever water can be obtained by digging, there can a home be made, for the soil of the hills is less subject to drouth than the low lands. There is a constant seepage from the land above during summer, and it is very seldom that any class of vegetation will suffer for lack of moisture. The trouble has been with the majority of emigrants that they formed a too exalted idea of what they would be able to accomplish here. To those who come here with a full understanding of the country and a determination to act just as they would if emigrating to Kansas or some other agricultural State, there are many opportunities to acquire a good home and make a comfortable living in the foothills.

HORTICULTURAL SOCIETIES.

Below we publish a valuable communication from a correspondent of the Oakland *Daily Transcript*, entitled "What is Needed—a Plea from a Horticulturist," recommending a horticultural society in Oakland. We entirely agree with the writer on the usefulness and general advantages of such an institution. We are sorry to say that our Bay District Horticultural Society of San Francisco is, for any good that it has done for two or three years, entirely defunct. When it was in tolerable activity, and conferring benefits on the community both in its meetings and public exhibitions, it was chiefly under the management of the professional horticulturists and gardeners, and especially of an active, industrious and enthusiastic member of one of our nursery and floral establishments. He was ably supported by several parties in a similar business, but there were many so engaged who stood aloof, and could not be induced by any means to second his efforts and those of his coadjutors. In consequence of this the institution suffered, and as there were but few amateur cultivators that could then be induced to join the Society, the majority of the members to carry on its business were our regular nurserymen and florists. These considered that they had to attend closely to their nurseries, conservatories, hot houses, and to customers, and could only spare a few hours in an evening meeting about once a month. Thus the management of the association necessarily fell into the hands of the party or parties who were anxious for its success. This created some jealousies in a few persons, and there were some minds which were not sufficiently liberal, comprehensive, and enlarged to be aware that whoever promotes a good cause, beneficial to the public, and which creates a taste and demand for certain commodities, is conferring a benefit upon all so commercially occupied. If the Bay District Horticultural Society is ever revived, however, and it is very desirable for the good of our people that it should be some time or other, we trust that there will be such an interest created for it by amateur florists and cultivators that they being in the majority, the direction of its affairs will be in their hands, and so render the possibility of all envy and jealousy, let it be ever so little, entirely out of the question. Should we

ever be so fortunate as to get this association again into wholesome life and action, we hope that there will be so much love and interest created for its welfare, that there may be a meeting appointed for it at least twice a month —say on Saturday mornings at about ten or eleven o'clock, when all its business may be transacted, discussions on horticulture take place, specimens of fruits and flowers, etc., exhibited, to be judged by the several committees appointed for the purpose, and the general public invited to witness all that may be worth hearing and seeing, in what can be made with proper judgment a most valuable institution, as it is in all large, refined, and civilized communities:

"Let us have a horticultural society in Oakland. There is a necessity for one, for we are now cultivating many rare plants, the habits and beauties of which are but little known to the general public. Many excellent varieties of fruits that are merely local and their culture neglected would be made known and cultivated. A taste for the beautiful would be encouraged, landscape gardening, now thought little of and declining, would revive. Our rural homes would grow in beauty, and the magic influence of honest garden enjoyments would confer new beauties all over the land; flowers, evergreens, trees and golden fruit would gladden every home. Medicinal plants for profit, experiments in vegetable physiology, seedling varieties of fruits and flowers adapted to our climate and soil, would produce wonderful results. Our boys and girls would learn to appreciate a love for botany; there would be a better tone in society; they would be more fond of a new Rose than a new novel; the gardens at home would not be neglected; there would be purer society if the people were to cultivate a love for gardening and a

> 'Quiet bower of Arcadian sweets,
> Where odorous plants, in evening fair,
> Breathe all around ambrosial air.'

"Horticulture exalts the mind to a better understanding and prepares our intellect for the better knowledge of God's vivifying love. Let this good work bring rich and poor to multiply their mutual garden operations, and the good results will abundantly repay them. The Royal Horticultural Society of England has done more to harmonize and ameliorate the social welfare of that nation than her army and navy together. Often will an English nobleman stop his carriage to look at some beautiful flower or fruit by the way-side cottage garden. This makes the gentry popular with the lower classes, and the English landscape, so full of home-life, creates pleasant attachments in the hearts of the people. How is it here in Oakland, where we have a semi-tropical climate in which the Orange and Olive grow in the open air? Now, it is a well known fact that not one gentleman in twenty cares to walk or spend ten minutes in a garden; their minds are wrapped up by ever anxious cares, and their unsettled hearts have no home feelings for anything but the almighty dollar. Let some of our enterprising citizens call a public meeting to organize a horticultural society, and our nurserymen and gardeners will cordially respond. The results will be that in a short time Oakland will have a public park, and, perhaps, in time not far distant, a botanical garden that will equal any in the world. A. D. P."

Flowers are the only decorations that may be used by the rich and poor alike, and the fragrance of the Violet is as grateful in the cottage as in the palace.

FRUIT GROWING.

We find in the Sonoma *Democrat* an article on fruit culture, by W. H. Nash, which has the ring of practice and actual observation. We make the following selections from Mr. Nash's writing, in order that our readers may have the benefit of his experience and be stimulated to furnish us with the results of their own:

After twenty-five years of experience in fruit growing in California, we think it will be excusable in us if we presume to offer to the farmer a few suggestions relative to the soil and climate best adapted to the growing of fruit, as well as some suggestions as to the proper season and manner of planting the trees.

In our California climate our winters are so mild that it will do to plant at any time from the commencement of the first rains to the first of March. It has now become a well known fact that many varieties of fruit when planted near enough to the coast to be exposed to the winds from the ocean are almost total failures, but when this cause of defect is removed by planting these same varieties in the orchard lands of the interior they become not only thrifty and productive, but the fruit is unsurpassed in size and flavor. All trees should be selected with reference to the climate and soil where they are to be planted. The Pear-tree in California is much more hardy than the Apple-tree, and will grow and produce good fruit in almost any locality, but succeeds best in a deep, rich, and moderately dry soil. The Peach-tree succeeds best where the climate during the summer months is warm, ranging from fifty to ninety degrees, and the soil rich, moist, and loose. In a cool place this fruit is often of an inferior quality, juicy, but insipid. The Plum-tree should have a rich, moist soil, and when planted in poor land manure should be used unsparingly. The Cherry may be grown to the highest state of perfection when the land is a deep, rich, sandy loam, the water at no time standing nearer than eight feet of the surface of the ground, and where the temperature during the summer months ranges from forty to eighty degrees. On Mahaleb stalks the Cherry can be grown quite successfully where the soil is much more wet and heavy. The Quince, valuable for preserves and jellies, can be grown on moderately wet land, and will produce enormous crops. Almonds, we have experimented with two varieties of trees for a few years, and they have fruited to some extent. Like the Apple they succeed best when out of reach of the coast winds, but can not stand the heat of some of the interior valleys. We know of no better recommendation than to say that as a general rule, where table Grapes can be grown, the Almond will flourish. The Grape may be said to do well in almost any location in California that is out of the damp winds and fogs that prevail along the coast, even in some sheltered locations very near the coast they may be grown very successfully, but not of the best quality for wine. The Currant is one of the most valuable of all the small fruits, and is being used extensively for jelly, as well as for table fruit and pies. Like the Cherry it should have a cool summer climate, and a loose rich soil. The Gooseberry should have a moderately dry soil, with plenty of manure and good cultivation. If grown in cold, damp places the fruit will be subject to blight and mildew. The Houghton Seedling, however, may be grown in almost any location. The Blackberry should have a warm, moist soil to succeed well.

In the preparation of the soil, plow the ground at least twice and as deep as

possible; the subsoil plow may be used to very great advantage, and when the ground is hard it should not be omitted. Pruning the trees at the time of transplanting should be carefully attended to. The ends of the roots that always are more or less bruised in digging should be cut off with a sharp knife, and the branches should all be cut back to a bud within four or six inches of the main stem, leaving them in a proper shape for the formation of the tap.

We will give our method of planting, and think it will do to work by as a general rule: Dig the holes circling three feet in diameter and two feet in depth; the rich soil of the surface should be thrown out on one side, the balance on the other side of the hole. In refilling the hole, throw in the surface dirt first, which will leave the richest part of the soil where the tree will receive the most benefit from it. Fill up the hole to a proper depth to receive the tree without bending the roots, keeping it about the same depth that it stood in the nursery. Fill in about with loose dirt until the ground around the tree is level, then the planting is done. From the time of plowing, the ground should be kept well tilled and free from grass and weeds. A crop of Carrots, Beets, or Beans may be grown between the trees, but should not be planted nearer than four feet to the trees until after they have grown at least one year. Currants or Gooseberries may be planted in the same manner, and may be allowed to grow until the trees are ten or twelve years old.

The distance that the trees should be planted apart are: Standard Apples, 24 feet each way; Pears, 18 feet; Standard Heart Cherries, 24 feet; Duke C., 16 feet; Almonds, Peaches, Plums, Nectarines, 20 feet; Apricots, 24 feet; Gooseberries, English, 3x5 feet; Houghton's Seedlings, 6x8 feet; Currants, 2x5 feet; Blackberries, 8x8 feet; English Walnuts, 40x40 feet; Grapevines (in vineyard), 7x7 feet.

The very common practice in regard to manure is to apply a very large quantity immediately around the trunk of the tree, which is decidedly wrong, as it creates an excess of heat and enfeebles the growth of the tree. The proper way is to apply a sufficient top-dressing broadcast between the rows, and should be well plowed in where it can reach the extremity of the roots. There are many rich soils where manuring is unnecessary.

Mulching should be practiced in very dry soils, and only with newly planted trees. Would recommend sand to be thrown around the tree to the depth of three or four inches, and about six feet in diameter. It should be applied early in May. In protecting trees from the heat of the sun in summer, it is only necessary to protect the trunk. This may be done by means of two boards set together forming an angle; this is placed on the southwest side of the tree.

THE OIL NUT PALM.

A new industry promises to be added to the commercial prosperity of the city. By one of the last vessels from Mazatlan, Mexico, several bags of oil-nuts were received by parties in this city, for the purpose of having the oil pressed out and finding the results. We believe this is the first shipment made. The tree on which the nut grows is something like the Date-palm, and the nut is about the size of a hen's egg. The kernel is very hard, and inside is the nut, which is almost pure oil and about the size of a large marble. They grow in clusters, like Grapes. By putting the nut on the end of a sharp-pointed

piece of stick you can set fire to it with a match, when it blazes instantly and throws out a beautiful white-like flame. For centuries long before the Spanish conquerors subjugated Mexico, Central and South America, the natives used the oil of the nut for lighting their homes, oiling their hair, polishing their bodies, and in various other ways. In some of the mountain regions of Mexico, bordering the sea-coast, it is alleged that the pure descendents of the Aztecs, who are waiting for the coming of their god Quetzalcotl, burn what they call the sacred oil of the Oil-nut Palm. And it is said further that not many years ago the sun-worshiping Indians of Arizona, who claim descent from the Toltecs and the Aztecs, also burned the oil by day and night, never letting the light extinguish, as the pledge of their eternal hope that their god would also come back. What truth there may be in these statements it is hard to say, but it is certain that an effort is now being made to put the oil to different uses. We have been shown a private letter from a well-known merchant in Mazatlan to a capitalist in this city, in which the latter is requested to find out what would be the cost of a steam-power press to extract the oil. In Mexico it is procured by the simple process of mashing the nuts between stones. This is done by the Indians, and they only work when they are compelled to do so for want of a little money. The nut-bearing tree is very prolific, and is to be found in immense quantities along the coast regions of tropical America. Not far from Mazatlan there is a grove capable of producing 200,000 gallons yearly, but the trees are almost useless for want of the proper machinery to press the oil. The article sells in Mazatlan for from $3 50 to $6 per *arroba*, according to the supply of the market and the demand. An *arroba* is 25 pounds, and contains about three gallons. The quantity brought to market is readily sold. If San Francisco merchants — those doing trade with Mexico—do not profit by investigating this feature of commercial enterprise, it is probable they will find that representatives of European houses will control the business, as steps have already been taken to invite European capital in the development of the business. Articles published some time ago on California-Mexican commerce clearly proved the jealousy of European merchants in Mexico with regard to American ascendency in the commercial affairs of Mexico. Whether in this Oil-palm trade, the dry goods, the liquor trade, or other business, our rivals there are our enemies. They have so long controlled the trade that they will not give it up without a struggle. And with regard to the speculation in oil nuts, the reader must remember that the oil procured from it makes the finest fancy soaps in the world, altogether superior to anything procured from the cocoanut of the Cocoanut-palm. For lamp and lubricating purposes it is superior. As a fattening article it possesses extraordinary qualities. Cattle, pigs, and fowls eat the nut with avidity, and the flesh of animals feeding upon it is very white and delicate. Even when the oil is pressed out the refuse is used as food for cattle, and feeding upon it they grow fat, sleek, and strong. We give the facts to the commercial public, hoping that some of our merchants may profit thereby. In this sense they are of great interest. To others it will lead the mind to the wonderful beneficence of Nature in supplying all the varied wants of man, if indeed she does not contribute to gratify his taste for undemanded luxuries.—*Chronicle.*

FERN CULTURE IN THE PARLOR.

Ferns are plants the culture of which is very interesting, either in the greenhouse or parlor. Nothing adorns a sitting-room more than a case of Ferns in luxuriant health in the midst of winter, when vegetation is at rest out of doors. A case for this purpose may be made of any size and of almost any shape. In their construction, however, several particular points have to be borne in mind, for the benefit of the plants which are to grow in them, the first of which is a means of obtaining a thorough drainage. More failures occur in the cultivation of plants in Wardian cases from imperfect drainage than from any other cause, nothing being more injurious to the plants than sour, stagnant soil; and however porous the soil itself may be, without perfect drainage it can not be long in a condition suitable for supplying a healthy food for plants. The water retained in the soil, having no way to escape, soon sours it. To secure a good drainage, also dryness and tidiness in that part of the room where the case stands, two bottoms are necessary; one, the true bottom, which should be thoroughly perforated to allow the free escape of the water; below this one, another should be placed to receive the water as it passes from the soil, and therefore requires to be water-tight, and so adjusted that it can be emptied and cleansed without disturbing any other part of the case. On the upper bottom place a good thick layer of pot-shreds and charcoal for drainage. Upon this put a small mound of suitable soil for Ferns—peat, loam, and a good mixture of sand. Secure in this mound small stones and shells, so as to imitate small rock-work, allowing sufficient cavities for planting Ferns and Mosses.

Proper means of ventilation is also necessary, which is best acquired by having one part of the roof movable. When so constructed that the movable part can slide over the fixed part, it gives the least trouble, and is the most convenient when cleaning, watering, or planting the Ferns. Top ventilation is better for the welfare of the plants than when side ventilation is adopted, as then there are no ill effects arising from cold draughts passing through them.

When planting the Ferns, put some erect growing ones at the top, and the more dwarf and bushy ones on the sides of the mound, using Mosses of the denticulata type for carpeting the whole; those of the caulescent kinds which succeed well in these cases look best when mixed through the Ferns. Upon removing the plants from the pots, do not break up the balls any before planting; the roots will soon make a start into the fresh soil, which should be rather firmly pressed around the roots. After the plants are in, give a good watering, and shut close for a few days.

In selecting plants for such purposes dwarf-grown plants in small pots are the best. A good many Ferns are well adapted for growing in these cases; in fact, with the exception of the Gymnogrammas and Cheilanthes, few kinds in general cultivation but succeed in them.

BASKET PLANTS.

But of all the pleasing ways for growing plants the hanging basket is most attractive. There is something about their graceful beauty that wins the love of all. Elaborate baskets may be purchased, or simple ones be made at home that will be quite as pleasing. Some of the most beautiful ones we have ever seen were knots of wood from decayed forest trees. Many of these are of curious shapes, much like ocean shells.

With varnish applied, and slender chains or bright cords attached, they are ready for use. Others may be constructed of grape vines or branches of fruit and forest trees. In this way not only the flowers, but the receptacles in which they grow, will become the admiration of all of your city friends.

For basket plants the graceful Smilax is first of the list. Its dainty glossy leaves will add a charm to every thing it touches. Next, the English Ivy has the richest foliage, and if you can wait for its tardy growth you will have an elegant vine, but we like the German Ivy best. It will do such wonderful things in the way of adorning windows and pictures, and do them so quickly. The Kenilworth Ivy is the best trailing plant we have ever grown, and unsurpassed for a centre basket. Moneyworth is also a good trailer, but is prettiest among other plants. All these are of easy culture, and if given much water, morning and evening, will delight you with their constant growth. If these are too many in a home where work must lead and pleasure follow, two or three varieties in a single basket, or a little hanging garden, will become a thing of beauty, and give more pleasure than many a costly thing might do.

Any of these vines are exceedingly desirable for the lawn, for trellises, or over rock-work, or in rustic vases or lawn baskets. These may be made of branches of trees interwoven with grape vines, bound with moss, then filled with earth, and are exceedingly appropriate for a country garden where all the materials are just at hand. In these may be grown several varieties. The Dracæna is very showy in the centre of large vases or lawn baskets. Around this set Verbenas, with here and there a bright Pansy, and about the edge set trailing plants. If you wish vines for baskets with handles, Maurandya is excellent. One such basket will do more for its possessor if well cared for than a whole garden of neglected flowers, and these are as easily grown as the common kind.

A very attractive basket may also be made of wire, lined with moss, filled with Ferns, wild Plantain and Lycopodium from the forest. These will grow all summer with a very little care, in any shady corner of your rooms, and send up long, graceful, drooping fronds much larger than those first planted. In such a basket, place a bunch of Pansies or Forget-me-nots, and you have one of the loveliest ornaments imaginable.—*Mrs. D. Huntley.*

THE OLEANDER.

Make cuttings six inches long of old wood and place them in shallow water until they emit roots, then pot them. An Oleander is never so pretty as when confined to a single stem; therefore rub off all side shoots as they appear, reserving only a folinaceous top sufficient to carry on its growth. At the end of the second year we shall have a stem, say three feet high, perfectly straight and dividing at its top into three branches. If now it be permitted to grow unchecked it will soon display the loose naked habit which so mars the beauty of the Oleander as a house plant, while it demands a space that it scarcely merits. Let us cut off these three branches to within four inches of the main stem. Each branch will at once push a verticil of three buds, so that we shall have nine branches instead of three. These, when again cut back a few months later, will again trifurcate, producing twenty-seven, and so on until a thick ball of foliage is provided, that, with its clean, elastic stem and double

rose-colored flowers—produced more profusely for this course of manipulation—will prove a plant more attractive than one could suppose who has never tried this form of Oleander cultivation. Afterward we have only to cut it back season after season as it transgresses desired limits.

Oleanders are so far from squeamish that they will suffer the rudest treatment without resentment. We have two plants about eight feet high so closely alike that we never have distinguished one from the other. They are planted out in the spring, taken up in the late fall with all the earth that readily adheres, placed in the cellar and the ball of earth and roots covered with fine sand. Thus, while they are suitable for shrubberies, as single lawn specimens, or in borders of whatever description, displaying anywhere marked distinctness of aspect, they are really of no trouble whatever. If it is preferred to pot them for the conservatory or sitting room, it is well to know that the roots may be crowded into the smallest pot that will receive them, working in as much soil as possible and supplying plenty of water.

Oleanders are quite hardy. We once exposed a plant to 20 degrees for thirty minutes without injury except to the leaves. We remember a tree in Savannah, Ga., twenty feet high, growing in a court-yard, and it may be that they are hardy further north.

If a unanimity of veracious authors did not so pronounce, we should doubt that they (the *Nerium Oleander* species at least) were excessively poisonous, from the careless manner in which we have pruned and handled our own specimens for ten years without conscious injury. Indeed, our immunity is a strong argument in favor of the innocuousness of the plant.—*E. S. Carman.*

FLOWERS IN PARIS.

It is a rather singular fact that two of the uses to which flowers are put in America should be comparatively little known here. One is the ball-room bouquet, which every American society man is expected to bestow upon his chosen partner for the German; or which he delights in depositing as an offering before the shrine of the reigning belle of his own set, or the fair one who has specially attracted his admiration. No small tax are these floral tributes — in many respects rendered obligatory by the usages of society—upon the finances of a party-going young bachelor. In Paris his purse would not be drained in such a fashion. Young ladies as a rule do not carry bouquets to parties. Another most poetic and tender custom —namely, that of strewing the form of the beloved dead with flowers, and of covering the closed coffin with wreaths and other floral devices — is almost wholly unknown here. This practice—which in New York has of late years been carried to a pitch of ridiculous and outrageous extravagance — has always seemed to me, within bounds, one of the most appropriate uses to which the fairest gifts of Nature could be put. But the false nature of French sentiment rejects the real blossom, with its wealth of sweetness, of significance, and of tender emotion, to substitute therefor a sham of painted muslin and paper. The funereal wreaths which are laid upon coffins at Parisian funerals are composed of artificial flowers, some of them accurate enough imitations of white flowers; others of the stiff yellow immortelle in its glaring, uncompromising, unsentimental ugliness; and others, worse still, of glistening jet beads, or of white and jet beads intermingled. These crowns are also used for the pur-

pose of decorating graves, though what tenderness of idea or of sentiment can cleave to a stiff, prickly construction of wire and muslin, or of wire and coarse shiny beads, it is hard to discover. The sweet-breathed perishable garland which we lay upon a beloved tomb in America is in its loveliness and its fragility a type of the dear humanity that has passed away; but to our trans-Atlantic ideas the jet beads and artificial flowers are mainly suggestive of the milliner and the mantuamaker. On the other hand, natural flowers are becoming the very height of fashion in Paris for wedding *parures*. At one or two of the late aristocratic marriages of this season, the bride appeared covered with real and rich-scented orange-blossoms, her lace flounces looped and her veil confined by fresh and lovely flowers.—*Lucy Hooper*.

VALUE OF AN ACRE OF RAISINS.

W. A. Saunders thus writes to the Fresno *Expositor* in reply to the inquiry, "What is the value of an acre of raisins?"

"I take pleasure in complying with your request to give information as to the value of one year's product from an acre of raisins. I have in a single instance made forty pounds of raisins from a single vine pruned in the usual manner of vineyard pruning. These raisins sold, at a country store, retail, for 25 cents per pound, or $10 per vine for the year. An acre of land would produce 700 such vines, giving a gross income of $7,000 per acre. But this is a result very far above what anybody must expect from raisin production. An acre of Grapes of Larga, Tokay, Fiher Zagos, or what Brother West calls 'White Malaga,' will produce in our superior climate, and from our best soil, with an abundance of water and good culture, on mature vines, from 10,000 to 40,000 pounds of Grapes per annum. General Negley gathered from an acre of six-year-old Reisling vines, at San José, 40,000 pounds last year. There is no reason why vineyards in in our county should not do as well.

"You will observe that I do not use the term 'drying.' Raisins are cured, not dried. Every person who has examined the best qualities of raisins has observed that instead of the juice having been merely expelled in the process of curing, it has been changed to glucose, or Grape sugar, and that instead of the raisins being but dried fibre, as is the case with dried apples, peaches, plums, etc., it is almost a solid mass of granulated sugar. And just in proportion as this change of the juice to sugar is effected with least loss of weight is the Grape suitable for making raisins.

"The Larga loses 50 per cent. of its weight in curing, the Tokay 60 per cent., and other varieties, including Muscats, from 60 to 70 per cent. Or, in other words, 100 pounds of Grapes will make from 30 to 50 pounds of raisins, according to the variety of Grapes used. You will thus observe that the amount of raisins per acre will range from 3,000 pounds from a light crop of Fiher Zagos to 2,000 pounds from a heavy crop of Largas. From this it is easy to determine the amount of cash from an acre. And right here we wish to have it borne in mind that we are writing about raisins, not the tough, ill-flavored, hard-seeded, dried Grapes, made from Catawbas, Missions, Zinfandels, Sweetwaters, Hamburgs, or any other wine, table-grapes, or trash that happens to grow on the farm; but raisins—fine, large, bright, bloom-colored, plump, luscious, sugary raisins. And for such, when once they become

known to the world, we do not think that we are over-estimating the price when we assume that we can rely upon receiving at least ten cents per pound for them, delivered at the railroad; that the gross sales will amount to $2,000 per acre, gold coin. I have data of the most positive character which leads me to rely upon clearing $1,000 per acre annually from my vineyard when in full bearing.

"To plow the ground well, construct distributing ditches, furnish the best of cutting on the ground, and set them in the best possible manner, is worth $30 per acre. The care for the first year, irrigating, etc., would be about the same as for corn, say $10 per acre. Added to this, after the first year, is an additional expense for pruning, or a total cost yearly of $15 per acre. In addition to this there is the cost of picking, curing, and packing, which makes a total of about one-half cent per pound for each pound of cured raisins, not reckoning the cost of boxes, which would be an additional expense, and could be made to amount to much or little, according to the manner in which they are packed."

CURIOSITIES OF PLANT LIFE.

Because a plant does well elsewhere it is no reliable sign that it will do as well on the Pacific coast. Plants vary much locally even in California. Indian corn flourishes on the Russian River only, in central California; but in Los Angeles, Santa Barbara and San Bernardino, maize produces one hundred bushels of shelled corn to the acre in ordinary cultivation. But no corn in this State makes mush which will hold together when sliced for the frying-pan, as all Eastern corn does. The castor plant, which hereabouts is like the ordinary bean, extinct in winter, is in Los Angeles a perennial tree, furnishing cabinet wood. It is in full bloom in January, carrying flowers and ripe beans at the same time. By the by, there is no tree more beautiful, no flowers more rich than the bright maroon cone-like flowers of the arborescent castor bean. The cherry tree, which in the East lives and fruits till men grow old who planted it, is of short duration here. In Los Angeles its rich coverture of flowers is equal to ours further north, but it bears no fruit. Wheat grows as well in the higher parts of Mexico as in California; but it bears no berry. Turkey rhubarb loses its medicinal properties when planted across the Atlantic. The tea plant grows better in California than in China, but to the aqueous infusion it yields no theine, which is the esteemed element. The tea plant grows well in California. We have seen a million of them, in full and luxuriant growth, among the foot-hills between Georgetown and Placerville. We tasted the infusion from its leaves, served Japan-fashion, which differs materially from Chinese methods. Instead of iron plates, heat is applied to the leaf from Japan, through a porous paper, expressly made, so that there is no burning nor overheating. We have taken tea which came from Assam and also from the vast tea gardens of the snowy Himalayas; and between them, as between teas of China and Japan, there is a marked difference. The teas of India are too rank; they are only used to give more pronounced flavor to the teas of China, which are growing year by year more insipid. We were not surprised to find in this first tea of California quite a difference from all others. It was not rank, but delicate; and considering that it was rudely prepared and fired through Japan tea paper in haste

for our Industrial Fair, we judged that tea culture may be a success in California, when it can be economically aided by machine preparation. The tea plants of El Dorado were all destroyed by a casualty that is avoidable in future. The experiment otherwise proved that, with irrigation, tea will grow first-rate in our foot-hills, and all the better where snow covers the bush for sixty days.

Editorial Portfolio.

DR. GERHARD RHOLFS.

The great African traveler, Dr. Gerhard Rholfs, who lectured before the Academy of Sciences on the evening of February 14th, is making this trip to our genial climate one of study and the gathering of information in the various scientific departments with which he is familiar. Our indefatigable friend, Dr. Kellogg, in his special department of botany, has been exceedingly kind to this distinguished foreigner — in fact this liberal open-heartedness is one of the doctor's noblest traits of character — and a short time ago arranged and classified some two hundred plants for Dr. Rholfs, also furnishing a large number of plates and drawings of the same, which were highly appreciated by our German visitor. Dr. Kellogg accompanied him on a scientific "hunt" over the hills of Oakland and beyond, during the charming and bracing spring weather that prevailed during the second and third weeks of February, with which Dr. Rholfs was delighted and gratified beyond expression. This gentleman, who is a much younger man than we supposed, being about thirty-five years of age we should judge without inquiry, has the energetic physical appearance of being a very determined, accurate, and thorough explorer, who must have the full confidence of the German Government judging from the important missions intrusted to his charge from time to time. We were very much pleased with his "familiar talk" lecture delivered before the Academy of Sciences, and we hope his sojourn in our midst will prove beneficial to us as well as to himself.

FRONTISPIECE.

We have chosen for the embellishment of our magazine, this month, two rural pictures. One, a sporting and harvest scene, and the other, a camping-out illustration. In the first are figures shooting quails, so abundant all over our rich and prolific State, and in which are found in large quantities, besides, nearly every description of game, for the delectation of hunters. As for grain harvests, especially wheat, our coast is equally distinguished. In the second engraving — camping-out — the scene, it is true, will answer for all the States in the Union; but for our slope, it may with truth be said, it is peculiarly characteristic, for, to many persons who love this kind of life (temporarily at any rate), our mild and genial climate is remarkably favorable, this enjoyment being practicable in every season of the year here; but, of course, the spring, summer, and autumn being mostly preferred for that wild and somewhat primitive condition of living, and pursuit of game of all kinds, conjoined, with some, either in whole or in part, in following the sciences of botany, entomology, ornithology, geology, mineralogy, etc.

HORTICULTURE AND PICTORIAL ART.

In examining from time to time Morris Schwab & Co.'s picture store and gallery, Post Street, and the interest-

ing works of art therein, some of which are from the brushes and pencils of the most eminent painters, whether in oil, water-colors, or crayon-drawings, that the world affords, we are always led to consider how much benefit the proprietors of this first-rate depot, and others in the same business, are conferring upon our State and city in promoting and cultivating that taste of the people which is calculated to appeal to the purer, more spiritual, and better attributes of their minds and feelings. This intellectual taste for the sublime and beautiful teaches us not to live altogether in the life of the senses, but rather to rise, in the contemplation of these objects continually, out of our grosser nature into somewhat more of an invisible life; into an upper sphere, even almost into the very presence of the Eternal Himself. The sincere love of the beautiful, the chaste, and the true in Nature and Art enables the soul to live higher and therefore happier than the senses alone. As an excellent writer has said, "The real world is far from being altogether what we see; it is what we do not see." In other words, it is the power which we may possess, by cultivation and æsthetic and pure thoughts, of spiritualizing to a great degree what may be termed our sense-knowledge, and as rational and civilized creatures digesting and converting it into a higher form of knowledge and more lasting gratification and pleasure. The viewing of a beautiful scene in Nature, or an admirable landscape painting, or exalted and virtuous scenes in public or domestic life, ought to address itself more to our spiritual than to our bodily senses. Some painters, as Ary Scheffer, are to the last degree spiritual; while others, as Titian and Rubens, are sensuous. The first-named artists were refining in the effects produced by their works; while the latter are only attractive, chiefly in the direction of the physical. May not the California Horticulturist, in its effort and purpose to promote in the public mind a love of flowers, and in some the pleasure of their practical cultivation, present some claim, however humble, to promoting somewhat the same good results that we demand for the proper estimation and value of the pictorial art? In this respect we consider pictorial art and horticulture in complete harmony. We can not conclude our notice of the above-named firm, and the generally high merit of their pictures, without referring to the urbanity and politeness of its proprietors, and their readiness to impart all desirable information to their visitors. Here also may be found, as well as good paintings, engravings, etc., all the first-rate materials necessary for artists in the successful prosecution of their delightful occupation.

BAMBOO (*BAMBUSA*).

In Japan, as in the East Indies, we everywhere meet with the elegant Bamboo, or Rattan, which, in common with the Firs, is held in high esteem among the Japanese for its constant verdure. The plant is used for decorating the temple-walks and sacred places, chiefly on festivals and other solemn days. In the tropics Bamboos grow thickly together like grasses. We have only to substitute Bamboos of some thirty or forty feet high for the grasses which compose our hay meadows, and in the place of a meadow to imagine a vast tract of land covered with these Bamboos growing so thickly together as to be impenetrable, and we know what a Bamboo forest is like—the long, narrow leaves all hanging from the pendant

branches, which spring from the straight green stem, in tangled, untidy-like confusion. The Bamboo grows in the semi-tropical, tropical, and equatorial zones, and is ranked in botanical classification among the grasses. R. J. Trumbull, Florist, Sansome Street, has two species of the Bamboo for sale; also Miller & Sievers, and Wellington, Washington Street. Should a person possess a small piece of marshy or swampy land, the Bamboo may be planted therein for ornament, if not for utility.

CATALOGUES RECEIVED.

B. F. Wellington, Nurseryman and Florist, 425 Washington Street, in introducing his Catalogue for 1876 of Vegetable, Flower, and Tree Seeds and Bulbs, etc., gives his customers and patrons some plain and simple, but still, to beginners in flower culture (and it is to be hoped that there are now many such), valuable directions for their management of flower seeds. We extract the following useful hints:

"The soil should be made rich, deep, and thoroughly worked until it is fine and in its best condition. Most flower seeds should be sown very shallow. Although some of the larger seeded varieties, such as Sweet Peas, Convolvulus, etc., are exceptions to this rule, these may be sown about one-half inch in depth. Tender varieties, such as Calceolaria, Primula, Cineraria, etc., need the protection the greenhouse affords. Flower seeds, when first sown, should be protected. A good plan has been found to spread newspapers over the space sown (and place small stones over the corners to hold them in place) through the day, to protect from the sun, and remove them at night, to get the benefit of the dew. More failures have arisen for want of this protection, and from deep sowing, than all other causes combined.

"The best time for transplanting ornamental trees, shrubs, etc., is immediately after the first rain, and continuously thereafter until the month of May. Plants in pots, however, may be set out at all seasons of the year. To insure a successful growth, the soil should be well prepared beforehand by digging, and an abundance of manure, if the ground is poor. All plants should be well staked after planting, to secure them from the action of the wind.

"In the selection of my stock I have spared no expense or care to procure the best, in every respect, to be had. I import direct from the most responsible growers in Europe and Germany, and thereby am assured that each and every kind is *fresh*, *reliable*, and *true* to name. Any person who buys seed merely because it is cheap is sure to lose in the end, and he is liable not only to lose his seed, time, and labor, but is also liable to lose a whole season, by not having time to procure reliable seeds (which he should have done at first) in time to realize a crop. Along the Pacific Coast, although it is small in size in comparison with some countries, we have every climate known in the world. From the locality of perpetual snow, where vegetation is unknown, to that of the most delicious of the tropics, we of the western coast can boast. In and between these two extremes every vegetable, fruit, or flower, known throughout the world, is grown in its greatest perfection, and we can challenge the world both as to size of growth and yield of quantity. In such a diversity of climate, of course the same rule will not apply to the same article and its cultivation in different lo-

calities, so that each person must consider his own climate, and use due reason in the application of instructions. It is best to sow and cultivate all vegetables in rows or drills, in preference to broadcast. The crop is tilled at less expense, both of time and labor, the vegetables are larger, and the result more satisfactory. Rich soil, deep culture, continual eradication of weeds, and free use of the plow or hoe, are indispensable for a good crop. Reason teaches this, while practice proves it. If the ground is low or soil very moist, good drainage is very essential."

It is to the interest of professional florists to sell none other but good seeds, fruit-trees, and plants, and all to be relied on as to quality and name, and this principle is for the benefit of all concerned, both sellers and customers, and it is so carried out for this reason.

Briggs & Bro's. large "Quarterly Illustrated Floral Work for 1876," Rochester, N. Y., and Chicago, Ill., with three handsome chromos. To quote their own words: "Flowers are the cheapest luxuries in the world, and oftentimes the investment of even a dollar in judiciously chosen seeds is the source of unspeakable satisfaction."

Ellwanger & Barry's "Descriptive Catalogue of Ornamental Trees, Shrubs, Roses, Flowering Plants," etc., 23d edition for 1876, Mount Hope Nurseries, Rochester, N. Y. Also to quote the language of this old and most enterprising firm: "Increased attention is now being paid to ornamental trees and shrubs. We have introduced from Europe all that appears to be of value for this country: the Cut-leaved Weeping Birch, Kilmarnock Weeping Willow, Oak-leaved Mountain Ash, Imperial Cut-leaved Alder, and many other beautiful and popular trees.

"Novelties and Specialities in Flower Seeds for 1876," from William Bull, King's Road, Chelsea, London, S. W., a very large and splendid collection of flower and vegetable seeds, etc.

Spooner's "Garden Guide and General Catalogue for 1876, with hints on the sowing of seeds and management of seedlings, watering pot plants, and laying out gardens," Boston, Mass.

Jno. Rock's "Descriptive Catalogue of Fruit and Ornamental Trees, Shrubs, Roses, Plants," etc., for 1876; location, Milpitas Road, one mile north of San José. Mr. Rock, in his prefatory notice, says:

"The superiority of trees and plants grown in this locality, owing to the peculiar adaptation of soil and climate, is a well known fact. The steadiness of temperature, free from extreme changes, renders propagation by buds, grafts, or seeds almost a certainty here. This enables us to offer a well-grown and complete stock of fruit and ornamental trees, free from such diseases and defects as are often carried from nursery to orchard, causing the early decay and short life of trees. We are continually enlarging our business as to varieties, extent of ground, and stock of trees and plants. Many highly esteemed new varieties have been added to our collection. We also offer, for the first time, the new early Peach, Briggs' Red May, unsurpassed in earliness, fruitfulness, and productiveness."

Long Brothers' "Eighth Annual Retail Catalogue of Floricultural Stock of 1876." Buffalo, N. Y.

"Spring Catalogue, No. 2, of New and Rare Plants for 1876, including Greenhouse and Bedding Plants." Storrs, Harrison & Co., Painesville, Ohio. Also, "Semi-annual Wholesale Trade Circular for Spring of 1876," from the same firm.

"Annual Circular and Retail Catalogue of Warranted Vegetable and Flower Seeds," James I. H. Gregory, Marblehead, Mass. This catalogue introduces the New American Squash—the Butman—the only one known to have originated in the United States, a cross between the famous Hubbard and the Yokohama Squashes.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Although California, in general, can not exalt herself upon her capability of raising the finest Apples in the United States, the country to the east of the Rocky Mountains going ahead of her in this respect, yet with proper attention to the preparation of the soil, and suitable care in planting, that important fruit may be raised on our slope to so fine a quality, texture, juiciness, and flavor that it need not take rank far behind the rest of the States and Territories of our Union. Oregon and Washington Territory to the north of us on this coast nearly equal the Eastern States in their production of good Apples, but do not we think come quite up to many of them; and our market in San Francisco is pretty well supplied with fair fruit of this description from those regions. We need not dwell upon the fact that the value of a generous supply of good Apples in the family has been long understood by every one; they may be cooked wholesomely and palatably in so many varieties of ways. Many farmers when they purchase land, looking for an immediate pecuniary return for their labor and products, are apt to delay longer than they ought in planting fruit trees. But in this favorable climate, from the month of December to March, there is a period in our rainy season when a beginning may be made in this most desirable work of planting. The first consideration for the planter is a desirable location, and the next, the varieties, of not only Apples, but of all other fruits that he may desire to possess. (For a list of varieties of all fruits best adapted to California see January number of the HORTICULTURIST, page 18). With respect to location, we will here quote the words of the New York *Herald*, which, on this and some other points, are, we think, quite *apropos* to our subject: "With many there is little choice in the location. If the chief object is the supply of fruit for the family, the convenience of access will constitute an important element in the solution of the question. All such persons will desire to have the planting done near the dwelling-house. But even here an elevated site should be preferred, as elevation is sometimes a condition that secures a crop against the effects of spring frosts; besides, the trees will aid in protecting the dwelling-house and other buildings from rude blasts, and the foliage will also afford a pleasing background to the rural landscape. [The first idea is not so necessary for California, as regards frosts, yet for the last five years these have been increasing here; but the last hint concerning high winds is certainly appropriate to our coast.] Where more extensive orcharding is contemplated, with a view to sending the fruit to market, if a somewhat elevated and favorable location can be made, more remote from the buildings, convenience must sometimes yield to considerations of profit; for it is well known nearly everywhere that valleys are colder than hills, and a few feet elevation will sometimes secure a crop when in the valleys it will be entirely cut off. [We have noticed many instances of this taking

place in Napa Valley, having seen the Grape crop destroyed in the bottom, when it was untouched at an elevation of about 150 or 200 feet above it.] Another important consideration in favor of a more elevated situation for an orchard is, particularly where a rich soil prevails, that on the elevated grounds, besides having the advantage of throwing off the excess of water from the surface, the soil is generally more porous and dry, and favors a more healthy growth than the valleys or perfectly flat lands. If the soil is not naturally porous and dry, underdraining is indispensably necessary to insure profitable crops. After the most favorable location has been chosen, the next most important step to be taken is in the preparation of the soil for Apple-trees."

If the ground is sufficiently dry without underdraining, it should be deeply trenched and the soil thoroughly pulverized. If the land is not rich, it should be manured and the manure thoroughly incorporated in the soil; as fresh manure should never come in contact, in considerable quantities, with the roots of newly-planted trees. Rich earth from the valleys or any other convenient source, where the ground requires enriching, is best to be placed around the roots of trees. Large holes should be dug and filled in with rich earth some time before planting, so that the rains may settle it, and that the trees when established shall stand no deeper than they did in the nursery. Great injury is often done by planting trees too deep. The roots require a certain degree of heat and air to thrive well, and too deep planting deprives them of these essentials. The work of planting should be done in our most favorable winter rains, and before the circulation of the sap begins. When the sub-soil is so compact that it is difficult for the roots of trees to stick downward, a land should be marked out, say twelve feet wide, where a row of trees is to be planted, and plow this land three or four times, throwing the furrow slices outward. In this way a broad middle furrow may be worked open two feet in depth. Then reverse the plowing so as to level off the ground, and plant the trees on the surface of a deeply pulverized seed-bed.

About the 23d of last month (February) large quantities of Apples were shipped here from Oregon and the northern coast; consequently prices of that fruit declined, and a fair article could be had, by the single box, at $2 to $2.50, and the best at $3. Bananas were in small quantity, and their price was unaltered, but, if anything, higher than than they had been for some weeks. They remained firm until the next lot was received from Honolulu. Los Angeles Oranges were in fair supply, but were firmly held at rather high prices until the beginning of the present month (March). California and Mexican Limes were quite plentiful. A few Grapes were received from Sacramento about the third week in February. They were somewhat shrunken, but considering the time they had been preserved, were of pleasant quality and flavor. Their price was 50 cents per pound, and they, of course, hung rather heavy on the market.

The principle changes in the vegetable market at the time above named was a plentiful supply of Green Peas and Asparagus, and a reduction in their rates of selling. Mushrooms became more scarce, and Kidney Potatoes were less plentiful, and the price advanced to five cents per pound. Dried Peaches were scarce and wanted. California Raisins were quite plentiful. Howe & Hall furnish the following: Apples, $2

to $3.50 per box. Eastern Cranberries, $13 to $14 per bbl. Oranges, Los Angeles, $18 to $40 per M. Lemons, Malaga, $12 per box; Los Angeles, $20 to $30 per M. Limes, $8 to $10 per M. Bananas, $2.50 to $4 per bunch. Cocoanuts, $7 to $8 per 100. Pine-apples, $6 per dozen. Dried Fruit—Apples, 6 to 7½c. per lb.; Peaches, 11 to 12½c.; Peeled, 18 to 20c.; Pears, 10 to 12½c.; Plums, 5 to 6c.; do, pitted, 16 to 17c.; Prunes, 12½ to 17c.; Apricots, 12½ to 15c.; Figs, white, 12½ to 15c.; black do, 6 to 10c.; California Raisins, 6 to 11c. Vegetables—Cabbages, $1 to 1.12½ per ctl.; Garlic, 3 to 5c. per lb.; Asparagus, 37½ to 50c. per lb.; Green Peas, 35c. per lb.; Marrowfat Squash, $12.50 per ton; Mushrooms, 15 to 20c. per lb.

About the beginning of this month (March), steamer from Oregon brought a large shipment of Apples, and a portion of the old stock being still unsold, prices weakened. A very fair quality by the single box was obtainable at $2 to $2 25, while the best could be had at $2 75 to $3. Los Angeles Oranges, Lemons, and Limes came forward freely, and met with an appreciative market. The receipts during the month of February were 876,200 Oranges, 82,250 Lemons, and 59,000 Limes. The crop is short, and a little more than one-half of it has already arrived. Oranges in general never become quite sweet here until about the middle of March or the beginning of April. We hear the cry of "sweet Oranges" by the peddlers in the streets, but the palates of their customers soon prove the fallacy of these public vociferations. To be sure, these Oranges so hawked about in the public thoroughfares are smaller and inferior in flavor to the best importations, but even the superior kinds are not excellent and perfectly sweet until the latter portion of the season. The sweetest and best are those having the thinnest skin, of good size, and generally of the deepest orange color. Sugar is the most judicious accompaniment to the sour fruit, but even in that case it is never very wholesome until its perfectly ripe, and then it is one of the healthiest of all fruits. It makes a good marmalade, and is fine when well candied, with the outer skin nicely pared, and is an excellent tonic, but the somewhat bitter flavor of these preserves is not relished by some palates.

The first Cucumbers of the season were received from Solano County during the first week in March, and retailed readily, though small, at 60@75c apiece. Green Peas are becoming quite plentiful. Asparagus is more abundant, but an active demand keeps up prices. A few new Potatoes are selling at 8@ 12½c ℔ lb.

How to Grow Orange Trees from Seed.—Save the seeds of a half-dozen nice Oranges and plant at once five inches apart, in shallow boxes with perforated bottoms. Let the soil be light and rich. In a year the seedlings should grow from eight to twelve inches. Make them of symmetrical shape now. Screen from frost and heat with light muslin cloth. Sprinkle every night. In the spring of the second year transplant to separate boxes, and graft them if you hear of any fine variety to do it with. In the third year transplant to the open ground, twelve or fifteen feet apart. The trees can be easily transferred, and either kept in the house or moved about at pleasure to beautify different parts of the garden. Young trees can be moved at any time, because the roots, extending in every direction, hold a fine ball of earth around them.—*Ex.*

Editorial Gleanings.

GRASS AND ROSES.

I looked where the roses were blooming,
They stood among grasses and weeds;
I said, "Where such beauties are growing,
Why suffer these paltry weeds?"

Weeping, the poor things faltered,
"We have neither beauty nor bloom,
We are grass in the roses' garden,
But the *Master* gives us room.

"Slaves of a generous Master,
Born from a world above,
We came to this place in his wisdom,
We stay to this hour from his love.

"We have fed his humblest creatures,
We have served him truly and long;
He gave no grace to our features,
We have neither color nor song.

"Yet He who has made the flowers,
Placed *us* on the self-same sod;
He knows our reason for being—
We are grass in the garden of God."

Marketable Fruits. — Nearly every variety of fruit at some time in the last decade has been a glut in California, and it has usually been the case that the overstocking of the market was followed by a reaction and a scarcity of the same variety. Californians are a race of people easily stampeded. The dabblers in stocks are not the only ones who rush first in one direction and then in another. Farmers and fruit-growers are subject to the same desire to grow suddenly rich, and the result is a glutted market. Fruit-growers especially, whose productions are so perishable, have need to comprehend the great question of market. Different sections of the country are adapted to different kinds of fruits, both in the nature of the soil and atmospheric conditions, and the location. It would be folly for a man whose place is one hundred or two hundred miles from market to think of competing with the man who lives adjacent to the metropolis in the production of Peaches, Berries, and other soft fruits. But in the raising of late winter Apples, Grapes for raisins or wine making, he can successfully compete with those who are better situated. The large supplies of Oregon Apples which are now supplying the California market is very suggestive of the capabilities of the mountain sections to occupy this field and to furnish Apples for the winter use. To the end of remedying these things, the Fruit-Growing Association should compile and furnish statistics and information that could be relied on by the fruit-growers themselves, and by which they might shape their actions. The growing of such fruits as find a ready market in the East can hardly be overdone. The supply of Bartlett Pears has never yet been large enough to supply the wants of Eastern houses, because they can be sent to Chicago and New York before fruit of the same kind can reach those markets from any other section. If there are other kinds that may be grown without limit, and with profit, the fruit-growers should have full knowledge of the fact and govern themselves accordingly.—*Call.*

Begonias. — There are two very distinct classes of Begonias — the one tuberous-rooted and valued chiefly for their flowers, not that the foliage is in any way inferior; the other for their foliage, though many of these are attractive for their flowers as well. Both classes possess a distinguishing, rare, eccentric beauty — whether we view their flowers or foliage — that invests them with a special adaptability to certain purposes. Of the foliage section, many bear leaves a foot in length — some of them of a metallic-olive color, spotted

and doubly margined with lighter and darker shades of a silvery and coppery lustre; others with a grisaille-colored disk, margined and veined with crimson; while both upper and under surfaces, as well as the petioles, are thickly covered with bright red hairs. The tuberous-rooted Begonias have annual stems and require a rest during the winter, beginning a new growth early in spring. The leaves are fleshy, of a rich, glabrous green, often doubly toothed or incised, and the habit of the plants is generally free and branching. The flowers of this section are often of great size and of various colors, such as white, cream, sulphur, orange, pink, salmon, magenta. If, out of doors, Begonias are more captivating in one situation than another, it is when, in a shady, secluded nook, they are interspersed with Ferns, Echeverias, Klenias, Sedums, Agaves and Cacti. Indoors, a greenhouse temperature is suitable, and the soil needs no especial preparation.

Management of Pot Plants.—Amateurs are apt, in re-potting plants, to make the soil too rich, under the impression that, because the roots are confined within a small compass, necessarily the soil must be very fat. Such is not the fact. Flowering plants should not have the soil over rich. They do better in pure soil, free from an excessive quantity of manure. What is used, should be the most thoroughly digested compost. The successful florist understands that the soil requires only to be in that normal state to insure perfect and continuous growth; and, therefore, instead of making the soil in pots over rich, he depends upon stimulating by means of liquid manure. A mistake generally made, in shifting from one pot to another, is the use of too large pots as the plants increase in size. In changing, use pots only one size larger than the plant was in before. To do this in the best manner put some drainage in the bottom of the pots, say half an inch of broken flower pots for four-inch size, being careful to close the hole in the bottom by laying a piece thereon; on this place a little rich compost mixed with one-half its bulk of sharp sand. Then place a pot one size less than the one containing the plant to be moved. Fill in around this with the same material, pretty finely packed. Lift out the pot and fill with soil, just so that the ball of earth in which the plant is contained will reach to about half an inch of the rim of the new pot. Now set the plant in and cave the earth about it from the sides, and fill up level with more soil.—*Western Rural.*

New Fruit Trees.—The Persimmon-tree of Japan is recommended by an Eastern agricultural society for general adoption. Members state that the fruit is much larger than the Southern fruit; that it makes a sweet and delicious preserve treated in any of the ordinary ways. We have tasted them put up like figs, and we can speak of their excellence. The peculiarity is greater sweetness and some aroma, which require time to accommodate to all tastes. Our nurserymen have the trees, and we believe they thrive well. The Paw-paw is also recommended. It is indigenous South. The fruit is a sort of Apple, and the taste is of a kind well suited to the table. Its leaves are valuable for one peculiarity: meat, however tough, is rendered tender by being wrapped in them for four to six hours. The seeds are a capital vermifuge. In California we need addition to our list of fruits. Mexico has many. The Zapote is as

large as our apple tree; its leaves are of a richer green, and its Apple-like fruit is rich and mellow as a Pear. Santa Barbara has a lone lady Zapote, eighty years old, and a great bearer. Like the Ailanthus, the male tree fertilizes but does not fruit. The lady fruit is imperfect, because no male attends.—*Call.*

Don't Prune the Vines Yet.—Viticulturists should not forget that for the past two years we have had heavy frosts between the 1st and the 6th of April. Nor should they forget that those vineyards that had been pruned early, and had in consequence sent out new and tender shoots, were greatly injured, and the crop for the season almost entirely destroyed; while those that had not been pruned until after the frosts named were not injured at all and bore heavy crops of Grapes. What happened last year and the year before may happen again, and prudence will at least prompt those who have vineyards to put off the time of pruning until after all danger is over. It will cost no more to prune the 1st of April than at any other time, and the vines will be the better for the delay, even should there be no frost. By that time the time of bleeding would be past, and the check which the late pruning will give the vines will have the effect to prevent too luxuriant a growth of wood, and will improve both the size and flavor of the Grapes. —*Sacramento Record-Union.*

Oregon Woods.—Mr. Dufur has collected in all thirty-three varieties of Oregon woods, which have been gathered by his personal efforts, the means for bringing the same out of the mountains and forests having been furnished by a few gentlemen at Portland, among whom are Messrs. R. R. Thompson, Ladd, Corbett, and Failing. We noted one specimen of Fir, a transverse section cut 130 feet from the ground, measuring 7½ feet across; another cut 200 feet from the ground measured 5 feet across. A Spruce section cut 98 feet from the ground measured 7½ feet, and at 143 feet height, it shows a section 5⅓ feet in diameter of the tree. A Laurel measures 42 inches across; an Alder 40 inches, a Chittim-wood 14 inches, a Larch 5 feet. A Silver Pine is on exhibiton, a remarkable wood that finishes equal to Satin-wood, and is only found in mountains at an altitude of 4,000 feet, which is said to be only known in the Alps and in our Cascade mountains. A cabinet Hemlock, found near the coast, makes very fine cabinet work. Of course there are specimens of the beautiful Oregon Maple, and of many other woods we need not name.

Weeping Trees.—The association of the common Weeping Willow with water leads people to think that it will not succeed elsewhere; but there are few spots, even away from water, in which it will not thrive, if the soil be deep. We have seen really grand specimens of it growing on lawns. Scarcely less beautiful is the Weeping Birch. Although its spray is not so long as that of the Willow, yet, owing to the tree being more lofty, it is nearly equally effective. Not so graceful, perhaps, as either of these, but a better arbor tree, is the Weeping Ash. Owing to its extreme pendulous habit, it is necessary that it should be worked on very tall stocks, as, if height is not secured at first, it cannot be obtained afterward. The Weeping Ash should be planted in quiet, secluded spots, where when fully grown, it may form a pleasant retreat

during sunny days. It will be found that a tree with a stem considerably bent or inclined at the top will form the most convenient arbor tree, as the position of the stem will then be at one side, instead of in the centre.

Wet the Cuttings.—In planting cuttings of Grapes, the butt-ends should be kept in water, or buried in the ground and kept wet, some days, or even weeks, before setting out. By this method the buds swell, and they start to root very quickly after being set out. There is no way so successful as planting with a bar, provided that the lower part of the hole is tamped full of dirt. This is a very essential point, because, as often happens, if the lower end of the cane which contains the root-buds or eyes is not closely packed with earth, but hangs loosely in the hole, the minute root-fibres will sprout out, and instead of taking hold in the soil, will twine themselves round and round the cutting itself and soon die. Whenever a certain number of cuttings do not grow it is one year's time lost on them, besides the labor of resetting, and it will pay in both time and money to exercise the greatest care in this regard. Where a small number only of choice cuttings are being set out, it is a good plan to pour a little water in each hole after putting in the cutting, which settles the dirt around the bottom.

A Rose-Flowering Locust.—A late number of the London *Garden* furnishes a handsome colored plate of what it terms the "Rosy Locust." It is not the old Rose Locust, or *Robinia hispida*, so well known in this country, but a variety of the *Robinia pseudacacia* (or common locust), having handsome light red flowers, or rather numerous red stripes running across the otherwise white petals. It must make a magnificent appearance when the trees are in bloom. It appears that a large number of varieties of the locust, both in the color of the flowers and in the form of the trees, have been originated, among which is a weeping tree, and one growing upright like the Lombardy Poplar.

A Beautiful Tree.—The Camphor-tree perfumes the air, its leaves yields the finest honey. It often reaches a hundred feet in height with a girth of fifty feet. The precious gum is found sometimes in layers as large as a man's arm, but more frequently in small fragments, extracted with sharp-pointed instruments. The wood is excellent for house, ship timber, and furniture, and excepting the Teak and Calumbuco is the only wood never attacked by the myriads of voracious insects in the East Indies. The common kinds of camphor are procured by distillation.

Maurandia Barclayana.—This is an elegant greenhouse perennial, but can be easily raised from seed in a hot-bed or in the sitting-room, and if planted in the flower garden will bloom freely from August until cut down by frost. It makes one of the most beautiful of house plants for training over a window, as it will bear the sun well, and is a profuse bloomer. The flowers are of different colors, ranging from a rich purple to rose color and white. The plants grow from six to ten feet in height, and climb by means of their leaf-stalks, which they use as tendrils to twist around the string given them for support. The plant is a native of Mexico and has been in cultivation since 1825. It grows readily either from seeds or cutting.

Flower Pots in Rooms. — Pots which contain ornamental plants in rooms are often needlessly repulsive by the exposure of the earth in which they are planted. We have found a covering of an inch of white sand to prevent crusting the surface or soiling the edges of the pot, and at the same time allowing free watering. A more ornamental appearance is effected by procuring from the woods the handsome flakes of fresh green moss, found in damp places or on rotten logs, and covering the earth in the pots neatly with one of these flakes. It serves as a mulch, keeps the earth moist and mellow, admits watering, and furnishes a neat green carpet under the plants.

Oregon Fruit.—The people of Oregon are proceeding to engage heavily in the cultivation of fruit, especially Plums and Prunes, with a view, of course, to manufacturing dried fruits on a large scale. The fact that one orchardist claims to have sold his Plums for years past at an average of $1,000 per acre per annum has caused people to appreciate the value of fruit as a crop. Since fruit-driers have become a sure thing, there is no reason why we should not make the most of our climatic advantages for the production of fruit. Plums and Prunes are our easiest crop to raise and most reliable as to yield.

Evergreen Screens.—The *Scientific American* recommends evergreen screens as protectors of fruit trees, and thinks the benefit extends to a distance equal to the height of the tree. We are surprised at this narrow estimate. The late Isaac Pullen, of New Jersey, showed us evergreen screens twenty-five feet high, the marked benefits of which extended more than twenty rods. B. Macomber, of Grand Isle, Vt., found a decided advantage at a distance nearly as great, and others have experienced similar advantages.

Wash for Trees. — The *Practical Farmer*, speaking of a wash for bodies of fruit-trees, recommends the following: One ounce of copperas to eight or ten gallons of water forms a good wash, and is advised for trial as a preventive against blight. One pound of Breaches' soda and one gallon of water forms a wash that cleanses off all insects, and leaves the trees with fresh, young-looking, healthy bark.

METEOROLOGICAL RECORD,

For the Month ending February 29, 1876.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.		30.16 in.
do	12 M.	30.16
do	3 P. M.	30.15
do	6 P. M.	30.15
Highest point on the 14th at 12 M.		30.42
Lowest point on the 8th at 3 P. M.		29.62

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		51°
do	12 M.	56°
do	3 P. M.	58°
do	6 P. M.	52°
Highest point on the 22d at 2 P. M.		67°
Lowest point on the 29th at 9 A. M.		44°

SELF-REGISTERING THERMOMETER.

Mean height during the night	43°
Highest point at sunrise on the 22d	48°
Lowest point at sunrise on the 26th	36°

WINDS.

North and north-west on 13 days; north-east on 4 days; west on 2 days; east and south-east on 5 days; south and south-west on 5 days.

WEATHER.

Clear all day 11 days; cloudy all day 6 days; variable on 12 days; rain on 7 days.

RAIN GAUGE.	Inches.
7th	0.32
8th	1.39
9th	0.07
10th	1.05
24th	0.24
25th	0.06
27th	0.83
Total	3.96
Previously reported	16.44
Total for the season	20.40

BIG TREE OF CALIFORNIA

(*Sequoia gigantea*).

THE

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AND FLORAL MAGAZINE.

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ALOE PLANTS (*AGAVEÆ*).

BY DR. A. KELLOGG.

Of these the most common is the the Pita, or Century Plant (*A. Americana*). The last name is from an ancient gardener's fable, that it blooms only once in a hundred years, which as every one knows on this coast is not true; but having been so stated, when less known, has echoed along the ages like ten thousand other wonderful things, deemed too trivial to correct. These magnificent succulents do, it is true, husband their resources for many years, so that some little pretext is given to the fiction founded on fact. Were not this species so well known we might be excused for dwelling a moment on its specific description. Suffice to say, it has a vast mass of sturdy fleshy leaves four to six feet long, and one-half to a foot wide, or more, at the base, being several inches thick, pointed by fearful goading spines; these, massed, make most horrid hedges, perfectly barricaded and impenetrable; the flower stem is simply enormous, forming a towering chandelier thirty to forty feet high, sometimes a foot in diameter at the base. Sparingly distributed they give picturesque effect to extensive grounds. The fibres of both Yuccas and Agaves are extremely tough, and make excellent coarse cordage, stronger than hemp; but, as they do not take tar kindly, are inflexibly stubborn in storms, reluctantly twist and willfully untwist, and for manifold reasons they are given over chiefly to dry goods, and for strong sacking, etc. Both leaves and roots by beating and maceration yield a large amount of fibre called *pita* thread, and paper as well as clothing is obtained from them. These and their various uses have a reputation extending far back into the traditional times of the aborigines and Aztecs. Some yield soap (*A. saponaria*) in the form of evaporated juice. A kind of beer is made from the bud-sap called *pulque*—fœtid as carrion, but relished greatly if one hold his nose meanwhile; said to be salubrious, diuretic, etc. The root is purifying and curative in certain cases like sarsaparilla. An intoxicating brandy "strong as chain lightning" is obtained from several varieties chiefly *Agavecæ cubensis* and *A. Mexicana*, called "mexical" or "aguardiente de maguey."

The Utah Aloe (*A. Utahense*) is a new species recently described by Doctor

Engleman, collected by Doctor Palmer and Mr. J. E. Johnson. This species is well worthy the attention of florists, a fine ornament for gardens, and especially for parks and sandy dunes. The leaves, as usual, thick and fleshy, terminate in a strong spine, the margins mostly spring-toothed, one to two feet long, a crowded crown ranging from the base of the flower-stem, which is only five or six feet high, springing from a short stump or trunk, fibrous-rooted. The flowers are small and yellow, close set against the main stem in pairs or fours. For limited space this very ornamental species will ere long be in great request.

COMMENCEMENT OF THE WORLD'S VEGETATION.

BY A BOTANIST.

"Nature never did betray
The heart that loved her; 'tis her privilege
Through all the years of this our life to lead
From joy to joy; for she can so inform
The mind that is within us, so impress
With quietness and beauty, and so feed
With lofty thoughts, that neither evil tongues,
Rash judgments, nor the sneers of selfish men,
Nor greetings where no kindness is, nor all
The dreary intercourse of daily life,
Shall e'er prevail against us, or disturb
Our cheerful faith that all that we behold
Is full of blessings."

The study of vegetable fossils, as relating to the knowledge of the first growth of trees, plants, etc., upon the earth, is, it is to be admitted, far less satisfactory than that of the animal remains, since in the great majority of cases the structures most distinctive of the subordinate groups of plants are formed of very perishable matter. The genera, and even species, of animals may be recognized by bones and shells, which are of a very persistent nature, and are found abundantly in stratified rocks and other formations and deposits. But the vegetable bodies which can resist the long continued action of water are few, and these afford only characters of large sections of the vegetable kingdom, without furnishing generic, far less specific, distinctions. It is therefore probable that the fossil plants hitherto found only partially represent the flora of remote ages, and there is no denying that ideas obtained from fossil plants of the first vegetation on our globe must be necessarily superficial and very speculative. Still, their study is very interesting to the inquiring and reflective mind. There is a sufficient amount of evidence furnished by them, however, to show satisfactorily that the first plants did not originate from seed, but from spores. They were undoubtedly cryptograms. The first land plants were certainly swamp plants — Mosses fitted to live in water as Bog-mosses are to-day accustomed to do, gigantic Calamites and Lepidodendra; for ever since land existed there have been plants of tree-like proportions and bulk. It is not necessary that there should be a rich and varied flora for this result to be produced. Were there no other plants in existence now but those belonging to the natural order Rosaceæ, we should still have herbs, shrubs, and trees covering the landscape; the yellow Cinquefoil (*Potentilla Canadensis*), and the wild Strawberry (*Fragaria virginiana*), are lovely herbaceous plants; the common Blackberry (*Rubus villosus*), and the Swamp Rose (*Rosa lucida*), are shrubs; and the Apple, Pear, Plum, and Cherry, are the fruits of trees, yet the whole of these are Rosaceous plants. Therefore, notwithstanding the great sameness of the plants which covered the ancient landscapes of our earth, they were not without their trees.

As the land became elevated and free

from water, Cycadaceæ, Coniferæ and a plant allied to the Pandanus or Screw Pine of the tropics, were added to these primeval forests; then the Dicotyledonous trees with true leaves, such as the Willow and Maple, and along with these we find the first evidence of the creation of flowers (our now continual charms), for Nature is always consistent with herself, flowers being, as is at the present time universally admitted, nothing but the ordinary leaves of the stem, brought together in consequence of a loss of vegetative power in the branch on which they are borne, and metamorphosed with reference to the reproductive function. The first bee makes its appearance in the amber or fossil resin of the Pines of the Eocene period; the fragments of the wings of butterflies and other flower-sucking insects are also frequently met with inclosed in the same curious and history-telling substance. Dicotyledonous trees of a low order of organization, such as the Birch, Beech, Oak, Poplar, Chestnut, and Hornbeam, were probably as abundant in the forests of the Eocene period as they are now in some of our present woods. But there is no proof of the creation of Rosaceous plants. These seem to be coeval with the first appearance of man.

Our forest trees were, therefore, not all created at the one time, but are the product of different geological eras; and the present plant-covering is only a fragment of many antecedent plant-creations. Coniferous trees with needle-shaped leaves, such as the Pine, Fir and Larch; also Ferns, Horsetails, and Club-mosses, are among the most ancient and persistent types. They have descended down to us from the oldest periods of the creation. This remark applies especially to the natural order Coniferæ, which, from the most ancient times even until now, in new varieties and splendors, has continued to develop. The first flowers among herbaceous plants appear to have been land and water Lilies, and plants belonging to the natural order Ericaceæ or the Heath tribe, such as the Whortleberry (*Vaccinium*), and the Alpine Rose (*Rhododendron*). Among trees bearing true leaves and conspicuous for flowers, the Tulip or Yellow Poplar (*Liriodendron tulipifera*) appears to be an ancient forest form; so also trees belonging to the natural order Leguminosæ or the Pea tribe, such as the False Acacia (*Robinia pseudo-acacia*), and the Honey Locust (*Gleditschia triacanthus*). These trees all preceded Rosaceous plants in the plan of creation. Trees bearing edible fruits, as well as beautiful blossoms, such as the Peach, Apricot, Apple, Pear, Plum and Cherry, were introduced when the earth was fitted for the reception of man; their remains are only found in the modern geological formations now in progress, and therefore, like them, they must be regarded as among the recent creations.

The most important fact taught by this geological history of the plant world, is that the organic and inorganic creation very slowly assumed its present appearance, and the evidence would seem to lead us irresistibly to the conclusion that changes have taken place in the organization of plants, by which these forms have been gradually and contemporaneously adapted to the ever-changing landscape. Hence the history of the development of plants is intimately associated with the history of those physical changes which the earth's surface has undergone. Just as the present form of a grand and venerable tree, which appears to us to be fixed, but in reality is as fleeting as all the other forms through which that tree has

passed from its first life-movement in the seed, is the final result of a long series of antecedent changes, so with the globe which we inhabit. The present appearance, or, more truthfully speaking, phase of creation, is the necessary result of a long succession of antecedent changes of which the earth's crust has preserved the memorial. This world, what is it but a great and ancient theatre, where the scenery of life is ever changing? And who dare say that the present arrangement of land and water, the forms of our modern forest trees, and of the entire animal creation, are any more fixed and unalterable than at any previous epoch? Nothing on earth is permanent, if there is any truth in the teachings of the past, and any constancy in nature.

THE MOCK WEEPING WILLOW (*CHILOPSIS LINEARIS.*)

BY DR. A. KELLOGG.

We wish simply to invite attention to this new and very graceful ornamental tree. Once fairly introduced it will ever after commend itself. At this time of writing we can find no reference to it, and can therefore only state from memory. It has been known to us more than a decade of years, and, like a thousand other things, a transient reflection awakens our astonishment at its neglect.

This *Bignoniaceous* flowering tree has so much the general aspect of a Willow that it deceived our early railroad surveyors, who reported it a desert Willow; but since subsequently seen in fruit and flower the first illusion was dissipated, and now with abundant specimens we have a Trumpet-tree, blooming nearly the whole year round. The short, trumpet-formed flowers are of a creamy white, often striped or pink-blushed to purplish; they come out at the tips of long flexile twigs, bearing slender pods eight to ten inches in length, which weigh down and droop the branches with an extra added grace.

In its native habitat it seems to seek the dry creek beds and banks like a Willow, clothing with verdure gulches and hollows; it is also seen struggling against drifting sands as well as washing waters; whether overwhelmed by the one or the other for a time, it rises again and again, marching onward to ultimate victory. It has been seldom seen over a foot in diameter, being more frequently repressed by its sterile surroundings to a mere shrub. This charming perennial bloomer, with its long and narrow leaves and general graceful port, we trust will soon become a general favorite for its own sake. Let the future tester of its utility for holding millions of acres from devastating floods, railroad embankments, and destructive sands, sing its praises to a more appreciating age.

FLY FISHING AND THROWING THE FLY.

BY PISCATOR.

No outdoor amusement or pastime to the botanist and lover of nature, or to the horticulturist, supposing that any of these are accustomed (at times, at any rate) to the practice of angling, is more enjoyable, and the associations nected with it, than fly-fishing for either trout or salmon. The Pentstemons and Eschscholtzias fringe his path as he goes to the mountain stream for his pastime. The perfume of the wild blossoms of many shrubs floats upon the breeze for his enjoyment. How grand, too, the scenery that he sometimes enjoys! Rocks and crags high beetling

to the sky, and mighty bowlders lie strewed around, resting in the verdant beds of Ferns and Chemisal, or sternly standing out among patches of Lilac or Buckeye. A stillness here reigns, scarce broken by the rivulet that murmurs on its rugged way. The crested quail that darts among the bushes, the piping note of the curlew, or the plaintive whistle of the sandpiper, and the shrill call of the plover, at times startle him from his sport; but all unite to give a zest to his day out among the mountain streams, which can not be truly appreciated but by those who have experienced it; for "trouting in a mountain brook is an experience of life so distinct from every other, that every man should enjoy at least one in his day." We could fill pages in descanting on nature's beauties and attractions while fishing, but this is not what we had in view, chiefly, when we commenced this paper. The object was a more practical one—to discourse on throwing the fly, that fascinating, neat, and delicate operation in angling. Well, we will suppose that rod, line, and stinting are all ready, save that the gut stinting is in stiff rings or coils, and does not look as if it could be thrown by any means straight out. To remove these let one take a piece of India rubber and draw this stinting or leader over it. By this means he will straighten it at once, instead of having to steep his line some time in water, a process recommended by some, but which may thus be obviated and time saved, as well as any deficiencies discovered in the line before using it. There are two general methods of throwing or casting in ordinary fly-fishing—*the right-round and the left-round casting or throwing.* Supposing, then, you have your line put on of the length above described, let out a little more reel-line, so that your casting-line, stinting, or leader, and what you let out of your reel-line, are together half as long as your rod. Take hold of your rod, letting the butt-end reach nearly to your elbow, with the reel-line between your forefinger and rod, ready for a run if you hook a large fish, and make the right-round cast in the following way: Raise the hand and forefinger slightly, causing the point of the rod to pass outwardly or on the right hand side, bring the top part of the butt of the rod over your right shoulder and toward your right ear, and so forward, and around the same way again once or twice. By this movement you will get the line on the sweep, which should be in an oval or egg-shaped form, the longer diameter of the loop thus formed being from front to back, and the smaller point of the oval the object you are fishing over or throwing at, and this in an oblique position. When it is coming the third time round past your ear, force the point of the rod smartly forward by the action of the thumb and wrist, aiming, as it were, your end fly at the place you wish it to light upon. Be careful at the same time not to let the point of your rod touch the water. To prevent this, after you have made the forward movement, gently raise the point of your rod a little, and let the line fall where it is directed. If you are using a very long line your arm will have to be brought into more play, to assist the stronger action required of the thumb and wrist in throwing the whole of the line clear out. The greatest care is required to let the line be well behind you in the oval sweep before you make the forward smart movement, or you will, undoubtedly, either crack off your end fly, or your line and flies will beat in a heap just before you, to your no small mortification. Always have your best killer for the tail or end fly, because you thus

save much entanglement when netting your fish, and can cast it to any point you choose. When you wish, then, to cast over a fish that you have seen rise in a still pool, where the water is as bright and clear as glass, give him the point fly only, and just on the place where he rose. Undoubtedly great skill is required to make your line fall lightly on the water, which in all cases it ought to do. If the fish rise in an eddy by the side of a fall or stream, or in a pool, cast your fly on to the very spot where he rose. If you throw above your fish in general stream fishing, you will see him dart to meet and take your fly as he does the natural one. If he miss it, cast again and again, as long as he rises, until you either hook or kill him, and do not leave him before you do one or the other. When trout are feeding well, you may rise them several times without hooking them; it is, however, far more satisfactory to kill one of these than half a dozen that give you no trouble. When a fish rises strike promptly, but not too full or hard; and if he be very strong let him run out with your reel-line, carefully and always gradually stopping him from making to some hold or impediment. If he throws himself clear out of the water, the moment he does so put your hand well forward, so as to let him beat easy on the water, and ease your line if he should chance to hit with his tail; but, as soon as he beats, haul him taut again, and so wind up your line until you can reach him with your landing net, or gaff. A gentle breeze, as it aids the lure, is always favorable to fly-fishing. When fishing you should be constantly watching your flies, otherwise they will be taken at a disadvantage to you, and the fish most probably lost. In fishing in a deep pool cast your flies across, and suffer them to sink a little, then draw them very softly back, giving them a slight shake, without breaking or making circles in the water, and let them swim down a little before bringing them out again for a fresh cast. The best time for fly-fishing is the forenoon, from about eight to eleven, taking the season through, and next to this the evening, from five until dark. Miss no water that is likely to hold fish; the variety is pleasing, if not quite so profitable. Never, by any means, plunge about in the water needlessly because you happen to be wading, for by so doing you will scare away more fish than you take. There is always "a feed" during some part of the day, and that is the time to kill the bulk of your fish. This is known from the way in which they begin to rise, as they make the water appear quite alive at such times. Take every precaution to throw your flies on the water naturally; that is, in the same way the insects themselves alight upon it, and let your imitation have as nearly as possible the same motion through the water, for trout readily detect any unnatural motion. Mild showery weather is generally good for sport, and frequently, in the height of the season, a downright wet day insures a heavy creel. In all streams much flogged by anglers small flies will be found to kill best, otherwise the larger the fly the more sure are you to hook your fish, and these generally of a larger size; but the kind of river and the color of the water will, in almost all cases, regulate their dimensions.

THE TRAVELS OF PLANTS.

Many familiar plants have been great travelers in their day. Some that are now thoroughly domesticated in our own land, and which we might suppose

to be true "native Americans," are merely naturalized foreigners from beyond the sea; and, on the other hand, some that belong to the vegetable aborigines of this Western hemisphere have migrated to the Old World, and are now quite at home in the "cultivated" circles of Europe. The birthplace of some is not easily traced, as their travels began in prehistoric times, and they are now citizens of the world, bearing no mark of their primal home. The wanderings of others have been confined to modern days, and are recorded with more or less accuracy.

In ancient times, plants were oftener distributed by warriors than in any other way. Alexander brought Rice from Persia to the Mediterranean, the Arabs carried it to Egypt, the Moors to Spain, and the Spaniards to America. Lucullus brought the Cherry-tree (which takes its name from Cerasus, the city of Pontus where he found it) to Rome, as a trophy of his Mithridatic campaign; and 120 years later, or in A. D. 46, as Pliny tells us, it was carried to England. Cæsar is said to have given Barley to both Germany and Britain. According to Strabo, Wheat came originally from the banks of the Indus, but it had reached the Mediterranean before the dawn of authentic history. Both Barley and Wheat came to the new world with its conquerors and colonists, and the Maize which they found here soon went to Europe in exchange. It was known in England in less than fifty years after the discovery of America; it was introduced to the Mediterranean countries, by way of Spain, at the end of the sixteenth century, and the Venetians soon carried it to the Levant. Later it traveled up the Danube to Hungary, and gradually spread eastward to China. While it was thus invading the regions formerly devoted to Rice, the former, as we have said, was establishing itself in this country.

The Sugar-cane, which with its sweet product was known to the Greeks and Romans only as a curiosity, seems to have been cultivated in India and China from the earliest times. Its introduction into Europe was one of the results of the Crusades, and thence it was transplanted to Madeira, and early in the sixteenth century from that island to the West Indies. The original home of "King Cotton" was probably in Persia or India, though it is also mentioned in the early annals of Egypt, and had spread throughout Africa in very ancient times. The Tea-plant has not proved a very good traveler, though its dried leaves have been carried in such quantities throughout the civilized world. The English have, however, succeeded in naturalizing it in Assam, and a very fine quality of Tea is now produced there.

It is a curious fact that the use of the Coffee berry was unknown in its native country, Arabia, until a mufti of Aden introduced the beverage from Persia, where he had acquired a taste for it. It has now become established in most of the tropical lands colonized by Europeans, who did not themselves become acquainted with it until late in the sixteenth century.

The Potato was found in Peru and Chili by the first explorers of those countries, who soon carried it to Spain. It is said to have reached Burgundy in 1560, and Italy about the same time. It appears to have been brought from Virginia to Ireland by Hawkins, a slave trader, in 1565; and to England in 1585 by Drake, who presented some tubers to Gerard, who planted them in his garden in London, and described the plant in his "Herbal;" and it was also introduced by Raleigh at about the

same date. But it was slow to attract attention, and it was not till a century later that it began to be much cultivated. In 1663 the Royal Society published rules for its culture, and from that time it rapidly gained favor. The Dutch carried it to the Cape of Good Hope in 1800, and thence it made its way to India.

The travels of the Bread-fruit tree became notorious in connection with the mutiny of the *Bounty*. A recent English writer gives the following facts in this connection:

"On Dampier's return from the South Sea Islands he brought accounts of this tree which astonished the civilized world, and the botanists of Captain Cook's expedition to the Society Islands afterward described it as 'the most wonderful vegetable in the world,' and represented the excellence of its yellow sweet fruit in such glowing terms that the British public became excited, many persons being bitten with the idea of unadulterated bread and penny loaves growing ready baked on a tree! Petitions on this subject were sent to George III., and at length the *Bounty* was fitted up for the purpose of conveying the tree from the Pacific to our colonies in the West Indies. She arrived at Tahiti in 1788, and shipped 1,500 young trees, with which her commander, Bligh, set off, intending to round the Cape of Good Hope, when the mutiny broke out, and the trees were lost. But the proposed migration was afterward accomplished by the navigator, and the cape was passed without exposing the delicate bread-bearing plants to a temperature below 61° F. Some of the trees were left at New Holland, others at St. Helena, and the rest were landed at Jamaica and St. Vincent, and the vessel freighted from the garden there with plants for Kew."

In modern times, useful plants have been carried to all new countries and colonies where the soil and climate suit them. Australia, for example, was singularly bare of native fruits; possessing only a few poor species of Currants and Plums, she has become a land of fruits and flowers too numerous to mention. Peaches, Nectarines, Pine-apples, Plums, Pears, Apples, Oranges, Lemons, Citrons, Strawberries, Bananas, and Mangoes, with many other fruits, including the Grape, all grow in perfection in Australia, as does the grain of Europe generally, and Wheat especially.

We have given but a few illustrations of the travels of plants, out of a multitude that presented themselves. A volume could be filled without exhausting the subject.

THE DEPARTMENT OF HORTICULTURE AT THE CENTENNIAL EXHIBITION.

Charles H. Miller, Chief of the Bureau of Horticulture, has given into the hands of the printers of the official catalogue the list of exhibitors in the United States section of the Horticultural Department, so that the work of the Bureau, as far as it concerns the classification and arrangements of the exhibits, may be said to be finished. This is the first of the Centennial Bureaus to give in the lists for the catalogue, and the fact shows that the work of this department is in a very advanced state.

The ground assigned to the Department of Horticulture by the Centennial Commission comprises forty acres of land, which is being prepared and laid off into allotments for exhibitors. The space available for exhibits, and which is exclusive of walks, sites for buildings and reserved space, is about 8½ acres, or 363,748 square feet. Of this amount

323,623 square feet have been applied for, leaving a balance of 40,125 square feet.

Some of the exhibitors intend making very large exhibits of ornamental trees and shrubs, forest trees, plants of commerce, etc. All the representative trees of this country will be exhibited. Plants of recent introduction from Japan, China, and other portions of the world will also be exhibited. England, France, Portugal, Brazil, Austria, the Netherlands, the Argentine Republic, and Spain have made applications for space.

In the line of garden adornments the applications for space show a lively interest among exhibitors. The four greenhouses on the north and south sides of the main hall, containing 1,600 square feet, exclusive of passages, have been set apart for exhibits of choice plants of commerce and tropical and exotic productions. The main hall contains 18,400 square feet, and will be ornamented by a handsome marble fountain in the centre, together with four large flower beds of choice tropical plants, statuary, and specimens of ceramic art.

The building is heated by means of four large return flue boilers, placed in the basement of the main hall, connected by a system of iron pipes, laid horizontally under the floor of the passageways. These pipes convey the water to and from the boilers, and by propulsion of heat the water is kept in motion throughout the house, and disseminates a gentle atmosphere in every part of the building in the coldest weather, equal to the temperature in Madeira. By an arrangement of the connecting valves, any one of the four forcing houses can be heated without the others.

The only foreign nations which will exhibit plants in the building are England and Spain. England will occupy a portion of the eastern end of the main hall, and Spain will occupy a section in the eastern portion of the southeastern forcing house. The Netherlands and Brazil will display a fine collection of horticultural implements, flower-stands, statuary, vases, etc., and will occupy a large room in the northeastern portion of the building. The room in the northwestern section of the building will be used as an office for the Bureau. A portion of the room will be partitioned off, and will be used as headquarters for horticulturists from a distance, and the various horticultural publications will be kept on file for their use.

The remainder of the building has been allotted to American exhibitors. At the north entrance of the building will be placed a telegraph office, and at both the north and south entrances cut flower-stands and soda water fountains. The grounds surrounding the building will be tastefully laid off into plots for the exhibition of plants of various descriptions. All the grading, sodding and cutting of walks, and a good deal of the planting, have been done. Among the exhibits will be 200 distinct varieties of Geraniums, 100 varieties of Verbenas, and the largest collection of Roses which has ever been made in this country. The sunken garden in front of the building and extending to Belmont Avenue has been laid out and will contain beds of flowers, arranged with regard to pattern and colors in imitation of carpet. Near the middle of the garden will be two handsome fountains. These beds have already been planted with hyacinths and tulips, and other beds have been laid out on either side of the sunken garden. It is estimated that 47,000 flowering and ornamental plants will be required to ornament the grounds. On the north of the building will be a flower tent 50 by 150 feet, to

be used for an exhibition of Rhododendrons. The exhibition will last fifteen days, after which the tent will be used for an exhibition of cut flowers.

Two summer houses, one of wood and one of wire, will be erected on the grounds, and two manufacturers of rustic furniture will make special exhibits of rustic chairs, settees, flower-stands, hanging baskets, etc., to be exhibited in three buildings, to be erected for the purpose.

Exhibitors from the United States will occupy nearly all the ground included between the old Lansdowne drive (which has been laid out as a promenade), Belmont Avenue, the Women's Pavilion, and Horticultural Hall. Portugal will occupy a plot in the southeastern portion of the ground. England, one acre southwest of the hall; Spain south of the hall; France southeast of Spain, and the Netherlands south of France. On the east of Horticultural Hall a circular plot of ground has been laid off with a circle of thirteen flower beds, arranged in the form of stars, representing the thirteen original States. In the centre will be a fountain. North of this and northeast of the hall, is the ground allotted to Austria.

There is every indication that the display in the Horticultural Department will be very extensive and beautiful, and the exhibits from Pennsylvania and New Jersey in particular will be highly creditable and attractive.—*Philadelphia Ledger.*

ADVANTAGES OF TIMBER BELTS FOR ORCHARD PROTECTION.

I inclose a few notes, being outlines of the opinion I have formed resulting from an experience and observation in the Northwest since 1838.

It is a well known fact that the fruit trees in the orchard, in the lake shore timber counties in Wisconsin, are more hardy and productive than in the prairie counties.

The line of demarkation of the difference in the hardiness and productiveness of orchards in the timber and prairie counties bordering on Lake Michigan is quite clearly defined, and is the southwesterly edge of the timber belt in Milwaukee and a portion of Racine County. In the one instance, the orchards in the timber belt are hardy and productive, as compared with the orchards in the prairie section.

The difference which exists can not be wholly attributed to different winter climatic conditions, or proximity of the water of Lake Michigan, as the prevailing severest winter wind is from the northwest, and the maximum degree of cold in the lake shore and interior counties varies only one to three degrees, as is shown by a comparison of the meteorological reports for the winter of 1874 and 1875, made by the University of Wisconsin, located at Madison, and the United States signal observation office, Milwaukee station.

Neither can the healthfulness of fruit trees be wholly ascribed to any difference of plant food constituents contained in the soil, from the fact that the soil, in many of the orchards in the timber counties, is variable, and consists of gradations of sand, clay, gravel and loam. One at least, if not all of the soil constituents contained in the orchards of the timber counties, is, to a greater or less extent, similarly photographed in the soils of orchards in the prairie counties.

Neither can the productiveness of the timber county orchards be entirely attributed to their proximity to Lake Michigan, as the prevailing summer winds are from the southwest; the di-

rection of the wind being toward, instead of from, the lake, and can therefore only exert an influence in proportion to the modifying effects of the temperature, and moisture contained in and derived from the upper air current as it passes inland from the lake, and eventually mingles with the lower air current.

Now, as the hardiness and productiveness is not wholly due to extreme cold, or difference of distances from Lake Michigan, it is assumed that, aside from the modifications incident to cultivation and acclimatized constitutional characteristics of varieties, the natural forest protection is the potent cause favorable to the longevity and fruitfulness of fruit trees in the timber counties.

It is a well known law "that the extraction of heat and expulsion of moisture from the vegetable, as well as the physical system, is in proportion to the degree of temperature and the volume of moisture contained in the atmosphere and the volume of wind." Now, as the prevailing severest winter winds are from the northwest, the extraction of latent heat and the exhalation of moisture from exposed vegetation must be very great.

The effects of excessive evaporation of heat and exhalation of moisture are manifested in twisting the foliage of evergreen trees, and the shriveled appearance of the small branches of deciduous trees, and resulting in destroying or impairing their vitality.

Further observation of the healthfulness and fruitfulness of Peach-trees planted at an early day in the timber county, when the country was covered with a dense forest, with only scattered cleared fields of two to ten acres in extent, the Peach-trees came into bearing, and were so productive that many of the trees broke down with the weight of fruit, and other trees died from exhaustion caused by over-bearing; but since the country has been, to a large extent, denuded of timber, Peach-trees can only be grown in isolated localities, favored with some sort of protection. Although the natural forest has largely decreased in area, yet that portion remaining is so very effective in breaking the force of the winds, that the Apple orchards are more hardy and fruitful than in the prairie sections. The beneficial results derived from natural forest protection are further visible by observing that the orchards in the timber region, which have natural forest growth adjacent to the north and west, are more vigorous and fruitful than orchards half a mile from such protection, and that the similar beneficial results are noticeable in orchards in the prairie sections which are partially or wholly surrounded with timber belts.

Hence it is concluded that natural forests and timber belts break or impair the force of wind, and thereby tend to lessen the extraction of heat and the exhalation of moisture from the stems and branches of fruit trees, and that the orchards so protected must be more vigorous and productive than the orchards which are exposed to the full force of winter winds, moving at a velocity of thirty to fifty miles per hour.

Milwaukee Co., Wis. PIONEER.

DIRECTIONS FOR DRYING LEAVES AND FLOWERS.

To be able to preserve beautiful flowers and leaves for years, by means of drying them, is very desirable for the botanist, as well as all lovers of plants and flowers. A collection of dried specimens that have been fixed to sheets of fine white paper is called a Herbarium, and where the names, place, and time

of collection of each is given, and all are systematically arranged under their general orders, etc., it becomes very interesting. The materials used for drying fresh or green specimens are simply a quantity of soft, unsized paper, such as will absorb moisture quite readily, and a press of some sort. What is known as blotting paper would be the best kind of paper for the purpose, but something much cheaper will answer very well. Most kinds of paper used for newspaper printing are good. By touching the tongue to it, if the moisture left on the surface is quickly absorbed, then it will answer. Of course the sooner it shows itself to be absorbed, the better is the paper. The paper should be cut into sheets sufficiently small to handle well, and the greater part of these may be made into *driers*, consisting of a dozen or so sheets held together with a stitch or two of thread. The specimens to be dried should not be long picked from the plant before placing them to press between the driers. The pressure may be applied by a regular screw press, or by simply placing weights on the matter to be pressed, when all is ready. A pressure of fifty pounds would do for small operations. By having it too heavy, the more delicate parts of the leaves or flowers will become bruised. First lay down one of the paper driers, on top of which place a single loose sheet. On this the leaves or flowers to be preserved should be placed. If the specimens are small, a number may be laid on one sheet. Then lay another loose sheet directly on the specimens, and on this another drier, continuing in this manner until *one-half* the driers are used, and then apply the pressure. The object of all this is to have the paper absorb the moisture in the leaves as quickly as possible. After six or ten hours the press should be opened and the specimens taken out and placed between the driers which have not been used. The single sheet next to the specimens above and below may, for convenience in handling, remain in the new making up of a form for pressing, especially if the specimens be small and consequently difficult to handle individually in their partially dried condition. The driers taken out will be found quite damp, and should be hung up to become thoroughly dried for use again. After the specimens have been pressed for twelve hours the second time, then they should again be taken out and placed between the first driers, which ought to be dry by this time. After one, two, or three more pressures, always substituting the newly dried driers for the damp ones taken out at each change, the specimens will be found sufficiently dry. Then they can be fixed in the Herbarium with the aid of a little glue or mucilage.

PROTECTION OF STREET TREES.

Of the thousands of trees which are annually planted in our streets and highways, very few ever grow to be of any value or ornament. The trees are planted, and then, instead of being cared for as they should be, they are left entirely without protection, and are at the mercy of every stray cow or horse that chances to rub itself against them; and, in nine cases out of ten, the trees are either entirely killed before the end of the first season; or are so barked and twisted as to make them an eyesore to the beholder. It would take but very little time to remedy all this, and place the trees in a condition which would not leave them liable to receive damage from stray cattle. When the trees are planted they should, by all

means, have some adequate protection given them. It matters little how this is done, so long as it is done. If the trees are within a foot or two of a fence, a single stake may be driven on the side of the tree opposite the fence, and pieces of wood nailed to this and to the fence, in such a manner as to enclose a triangular space for the tree. The stake should be, at least, three inches thick and should reach six feet above the ground. The strips which are nailed to it and to the fence, should be about two feet apart, and may be three inches wide, and one inch thick. If the trees are not situated so that this may be done, either three or four stakes may be set around the tree, a foot or more from it, and these connected by strips, as stated before. This will make a strong protection; but not an ornamental one. Where the trees occupy a prominent position, something more ornamental should be used. The frame described above may be made of oak, smoothed and painted; or, as is often done, the whole protector may be made of boards standing on end, and nailed together at the corners so as to form a square about the tree. These boards may be planed and painted, and should be plentifully bored with holes to admit a free circulation of air about the trunk of the tree. Various designs will suggest themselves for arranging these holes in pleasing groups and forms. It is much better to have these protectors ready before the trees are planted; and during the leisure days of winter is an excellent time to prepare them for spring use.

FRUITS RAISED NEAR SYDNEY, N. S. W.

During a period of little more than two months is the season of Strawberries, Cherries, Loquots, red and yellow American Plums (wild), Raspberries, Mulberries, Whortleberries or Huckleberries, Gooseberries (black, green, yellow, and white), Apricots, Gage, Damson, and other Plums, Pears, Apples, Peaches, Grapes, Figs, Nectarines, Passion Fruit, Bananas, Musk and Water-melons, Pineapples, Cocoanuts, Lemons, and Oranges, which last are found in the greatest abundance, and are the finest and sweetest I have found anywhere. The Mandarin (Chinese) Oranges—flat at the end, and of medium size—are very sweet, though not so juicy, and open very nicely by a little pressure with the two thumbs; the divisions separate, and may be thus eaten without the use of a knife, or wetting the fingers. The Orange, in fact, is the great staple fruit here, and it grows luxuriantly within six miles of Sydney. It is also cheap in its season, and within the means of all. All these fruits mentioned grow in the colony of New South Wales; but I have found no country yet that in every respect is equal to California in the fruit and vegetable kingdom. The vegetable market here can not be favorably compared to California. I think, and I have heard it said, that the people are too lazy here to cultivate them well. Besides the country will not grow them so finely.—*William Hoffman in "Jottings during a Trip round the Globe."*

NEW PLANTS.

From the *Gardener's Monthly:*

Violet Victoria Regina.—Recently we received some fresh flowers of this beautiful new Violet from Mr. Henry Chitty of the Bellevue Nursery.

New Variegated Fern—*Dictyogramma Japonica.*—Variegated Ferns are very rare. Mr. Williams of England has introduced this. The yellowish

green variegation is "herring boned" along the centre of each leaflet, as in some of the Marantas. There is a wood cut of it in the January *Florist and Pomologist*. It is a hardy greenhouse kind.

Dahlia Maximilliana. This is a new species from Mexico, with flower of a peach-blossom color, seeds of which are being offered by American seedsmen. It may be the parent of a new race.

Zonale Pelargonium, Distinction.—Mr. Chitty says this is a very interesting variegated leaved novelty. The leaves are dark green, having a narrow band of jet black near the margin.

Clematis ligusticifolia. — This is a remarkably strong and vigorous growing, hardy Clematis — a neighbor to the well known *C. Virginiana* of the Eastern States, and will at least be as popular. We note that it is now being offered in several of our seedsmen's catalogues. It grows from Colorado westward. A good thing for covering walls of houses or outbuildings.

Alocasia odorata.—The common *Caladium esculentum* is well known. Some years ago we noted a fine plant in the garden of Mr. Mitchell, of Milwaukee, as stated in our columns at the time. Since then we have noted it of immense size in Southern gardens, for which it is a very striking object. Mr. Hanford thus speaks of it:

"This noble plant while young, slightly resembles the well known *Caladium esculentum*, but grows to really gigantic dimensions as it attains age, and while the latter dies down annually to the bulb, this grows into a stem or trunk, which retains some of the foliage through the winter, if kept in the conservatory or sitting room. The leaves are of enormous size, of a bright glossy green, pith thick, fleshy mid.ribs and nerves, standing stiff and upright on a stout stem. Plants under good culture frequently attain eight and twelve feet in height. A remarkable plant and well worthy of a place in every collection of plants, for garden, conservatory, or sitting room decoration."

From the *London Garden:*

Abies aloquiana.—This Japanese species proves as hardy in our country as the Norway Spruce. The under surface is as silvery as the Menzies Spruce, while the upper surface is of a deep green. A correspondent of the *Garden* regards it as the handsomest of the Spruces.

Improved Petunias. — The Petunia thrives better in our climate than in that of the old world. Hender's Strain forms the subject of a beautiful illustration in the *Florist and Pomologist* of London, and are much like those we have seen of Vick, and others of our leading seedsmen.

Xanthoceras sorbifolia. — We have from time to time had notices of this new tree. A recent number of the *Garden* gives a colored illustration, and shows it to be more beautiful than one would suppose from the description. The flowers are as large as an Apple-blossom, white on the upper portion of the petals, but of a purplish crimson at the base, and they are borne in upright clusters like those of the Horse-chestnut. The leaves are like the Mountain Ash, whence its specific name *sorbifolia*. As it grows in its native wilds in China, together with the Kolreuteria, which is one of our hardiest trees, we may look on this as something well worthy of introduction into our own country.

Pentstemon Palmeri, Gray. — This handsome Utah species is of robust habit, attaining, in good soil, a height of from three to five feet. The lower leaves are petioled, varying in form

from ovate-lanceolate to spathulate, coarsely and sharply toothed; those of the stem broadly ovate, entire, and semi-amplexicaul, or sometimes even connate, all being of a fleshy texture, and, like the whole plant, smooth and gluacescent. The flowers are borne in a many-flowered naked panicle, from eighteen inches to two feet long; the corolla, which is Peach-colored, being remarkable for its short inflated tube and gaping mouth, as well as for the long reflexed lobes of the lower lip, each marked by a central reddish line, and the conspicuous projecting yellow-bearded sterile filament. It is quite hardy, and will succeed in almost any well-drained soil.

BRODIÆ VOLUBILIS, BAKER (*Stropholirion Californicum*, Torrey).—This Californian species is remarkable for its twining habit, the flower-scape often reaching the height of seven or eight feet, or even more. The flowers are produced in terminal umbels of from fifteen to thirty each, the perianth being of a light rosy-purple color, nearly one inch long, of a tubular ventricose form, contracted below the mouth. The foliage is linear, somewhat fleshy in character, and from twelve to eighteen inches in length. It is perfectly hardy, and of the easiest cultivation in any soil, but will probably succeed best in sandy loam. Seedlings will bloom the third year of their growth.

THE PHYLLOXERA.

We have written nothing about this insect before for the very reason that we knew very little about it. We were aware of the destruction it had caused to grapevines in Europe, and also that its appearance in California had filled viticulturists with much alarm, and that speculation is rife as to the possibilities of its ravages and the methods for exterminating the pest, preventing its spread, etc. We have carefully read everything we could find bearing upon the question.

It seems that these minute insects infest the roots of the grape plant, something as do the woolly aphis the roots of Apple-trees, only the phylloxera covers the entire bark of the roots as a scale, even to the far-reaching and smallest fibrous roots. This insect injures the vine by feeding upon the juices of the plant which it sucks through the bark. Hence the roots covered with the tenderest bark are preferred by them, and it is impossible to destroy them by the application of any poison that does not reach to the very ends of the roots. This being the case, and it being impracticable to so apply poisons, all efforts to destroy them by poisoning have failed. Immense sums of money have been offered for the discovery of some potent remedy, but without the desired result. However, it has been found that the pest can be drowned by flooding the vineyards for several weeks at a time with water. This process is not injurious to the vines if applied any time during the winter months when the vines are not in leaf. This remedy is probably the only effectual one, and is good enough where water can be so used. Vines growing upon hillsides of course can not be so flooded, unless it be found that ditches filled with water between the rows and about the vines will answer the same purpose.

It appears that the phylloxera works worse ravages in dry soils than in wet, so that in California it will, unless checked in some way, prove very destructive on all soils that are not occasionally flooded. Persons who contemplate planting vineyards should bear in mind the necessity of selecting ground

that can be flooded, or of bringing water upon it for that purpose.

It is said that the phylloxera is indigenous to the United States, and has been known upon the native grapevines in the East for many years, and that the insect is not destructive to the native varieties. Grapes that grow along streams and the banks of ponds, where the roots are below the water level, are not troubled with the pest. It is in such places that wild grapes grow in the greatest profusion. The following, from the *Ohio Farmer*, is a summing up of about all that is of practical utility as far as is at present known:

Our French correspondent, in his last letter, thus speaks of the phylloxera, its ravages, and the remedy proposed: The importance of the vine-bug or phylloxera question to France may be estimated by the fact that the insect, which covers the roots like a bark, has already destroyed nearly half a million acres of vineyard, and threatens with ruin two millions of acres more. Since three years a government commission has been occupied at Montpelier in experimenting with all suggested remedies on an affected vineyard several acres in extent. It may be safely said that the commission, composed of practical and scientific men, has discovered no cure. It has, however, demonstrated the happy action of manures in prolonging the life of the vine, although without preserving it. The submersion of the vines, for thirty days at least, with running water in autumn or winter, and the subsequent application of fertilizers —known as the Falcon plan—is the sole efficacious remedy up to the present demonstrated, and so highly is it appreciated that a project is on foot to construct a canal, to be fed from the Rhone, so as to enable several million acres of vineyards to be temporarily inundated. A special commissioner has left for the United States to study a variety of American vine stocks, known in Pennsylvania as the "corn grape," and reported capable of resisting the phylloxera.—*California Agriculturist.*

Trenching among Trees.—Trenching is still practiced in England, but in this country it has gone mostly out of fashion. The subsoil plow pulverizes the soil so much more cheaply than can be done by hand that it will always retain the preference where labor is as dear as here. Trenching, however, admits the manuring of the subsoil, which subsoil plowing can not well do. Trenching orchard ground is found particularly beneficial where manure is digged in about the roots. Mr. Dancer, of Chiswick, England, practices trenching in orchards extensively, and gains crops of fine fruits. Fresh-feeding rootlets start from the old roots where cut off, and, finding well manured soil, supply the tree with abundance of food. It is always important, where roots of trees are to be pruned, that it be done while there is least activity—in spring, before buds swell, or in fall after the leaves have fallen. Orchards plowed in midsummer receive a severe check, which the roots do not easily recover from, while in early spring plowing may be done without injury, and, if the soil is sufficiently rich, with positive benefit to the tree. It is better not to plow fresh manure under in immediate contact with the roots. Its fermentation might cause fungus and disease to attack the tree. The better plan is to spread manure on the surface in fall or winter, and let snows and rains carry its fertilizing properties downward.—*Rural New Yorker.*

VINEYARDS IN CALIFORNIA.

Grape growing in this State can be made a very profitable business, notwithstanding the fact that the so-called "wine-growers" have not made money, and many of them have been obliged to give up everything, after some years of hard work, to foreclosers of mortgages on the property. Raisin and table grapes have paid well right along; and as the State increases in population and transportation facilities increase, so will the business of shipping fine grapes and making raisins become more and more important and surely remunerative.

We advise the planting of new vineyards of best varieties, and the grafting of the "wine" varieties to table and raisin grapes, instead of tearing up the old vines as some are doing. There is policy in the matter of grafting, as the well established roots will soon make new vines that will bear abundantly of superior fruit. A grape vine produces better fruit after it is a dozen or more years old than when it is younger. The old vines, if cut back and grafted, will, the second or third year after, produce as well as old vines. The maturity and strength imparted to the new top by the well grown roots make grafted vines equal in value to vines of same age as the roots. There is only one difficulty about grafted grapes, and that is the liability of the old stalk that is grafted to send out suckers. If grafted above ground there will be a good deal of trouble to keep those sprouts below the graft from outgrowing the scions. To obviate this, the old vine should be cut off from four to six inches below the surface. Remove the earth from about the vine with a spade and saw the old stalk off as smoothly as possible with a small, fine, hand-saw. The root stumps may be split grafted or splice grafted —it makes little difference, so long as the inner bark of the scion and the stump come together to form a union of growth. If the scion is set into the stump so as to touch the vital sap in only two or three places, it is enough to give circulation to the living juices in both stalk and scion. The stronger the cuttings are that are used for scions the better. Slender, weak cuttings are not good for scions. Choose them from the strongest growth of last year's wood. Make the split or cut in the stalk, then wedge the scion to fit and insert it firmly, without bruising the bark on either scion or stalk. One or two buds above ground are enough, and the scions should be shortened so as to admit of not over two buds above ground. Common grafting wax can be used. It is best applied warm with a brush. A vessel holding the wax can be kept over a portable coal stove such as tinkers use. Any one can make one that will answer the purpose out of a joint of stove-pipe. Some persons press the fine earth firmly about the graft and use no wax, and with very good success. The best time to graft grapevines is just as soon as the new leaves get to be about the size of your thumb-nail. Then the vines will not bleed. If grafted before the leaves start the old roots will bleed badly. About the first of April is a good time to graft in many localities. The vines may be grafted earlier, but experience has proved that it is better to graft after the bleeding season has passed. The cuttings should be prepared as soon as convenient, and put in a cool shady place out of the wind until time for grafting.

We hope that none of our readers who may have inferior vines will neglect to graft them this season. It will pay to do it. We are willing to admit that

the wine business is the poorest paying as well as the most demoralizing business that a poor honest man can venture into. But a good vineyard of useful grapes, for raisins and for the table, is at once respectable and remunerative. The White Muscat of Alexandria is the best raisin grape, though there are other good ones. The White Corinth or Zante Currant grape is bound to prove very valuable also upon this coast. The business of shipping fine grapes to the Atlantic States will always be a remunerative one. The Flame Tokay, Rose Peru, Black Hamburg and others are good for shipping.

Planting a vineyard in this State is not necessarily a very expensive job. It is not necessary to cultivate the ground any deeper than for a crop of grain. The rows should be laid off six to eight feet apart both ways, and may be struck out, after measuring accurately, with a plow in complete squares, by running straight furrows at right angles. Then in the ditch where the furrows cross plant the cuttings. A long-handled spade, run down the length of the blade, at an angle of forty degrees, will be deep enough to plant the cuttings. Remove the soil enough to insert the cutting and then pack the dirt back closely about it, and it is done. One or two buds above ground are enough. Two men can plant several thousand cuttings in a day when everything is ready. The after cultivation should be with harrow and cultivator and hoe, so as to leave the surface soil light and fine and free from all weeds, for the first two years particularly.

This is a very favorable season for planting cuttings, because the soil is so thoroughly filled with moisture, and March and April are good months to them. If you have to plow under a little patch of green grain to make a vineyard, it will not hurt anything but leave the soil in good condition. Every farmer on dry land should plant a vineyard for family use, for raisins, and for an investment to pay dividends as a branch of farming.—*California Agriculturist.*

THE ATMOSPHERE AS A FERTILIZER.

"The Atmosphere as a Fertilizer" is thus discussed by the Canada *Farmer.* One of the great advantages of the fall plowing is, that the soil is put in condition to receive benefits from the air, heat, cold, rain, and snow:

"This is a subject which, practically, receives but about half the attention it merits. Substantial manures, when obtainable, are of course the great desideratum, and no soil, however fertile, can long sustain nutrition without them. But in many instances these are not readily attainable, at least in appreciably large quantities, and it is well to know in such cases how best to adapt our soil for the absorption of those inexhaustible fertilizers which are chemically combined in the air around us. The composition of the atmosphere is so well-known that it need not here be repeated. It is, however, worthy of note, as illustrative of the wonderful resource of the air, that a young sapling, planted in earth that had been oven-dried, and receiving no other nourishment thereafter than that derived from the air, and an occasional watering, more than quadrupled its weight in a twelvemonth; while the earth in which it grew, having been again dried and weighed, showed a loss of only two pounds — a fact which proves that we are indebted almost solely to the atmosphere even for the solidity of our trees. The same truth on a smaller scale, as well as on the large, is being illustrated every day and all around us,

but the principle could be much more effectively utilized in agriculture than it is, and that simply by a more thorough pulverization of the soil. The decomposition of both animal and vegetable matter keeps constantly filling the air with fertilizing gases, and perfect tillage is the first step necessary to condense these in the pores of the soil. It follows, moreover, that if air is such an essential source of vegetable nourishment, the more of it supplied the better; and so it is, provided only it be supplied through the proper channel, viz.: the soil. The nature of soil, too, must here be taken into account, for some kinds are much more easily permeated than others. For instance, in testing with water, one hundred pounds of pure clay, dried, absorbed seventy pounds of water before any came through so as to drop. A similar weight of clay loam took in fifty pounds; English chalk, forty-five pounds; loamy soil, forty pounds; calcareous sand, twenty-nine pounds; and dry quartz, twenty-five pounds. The experiment illustrates strikingly the degree of tillage or pulverization requisite in each case as compared with the others. Carrying the test still further, five hundred pounds of good fertile soil taken from various parts of the world, and made perfectly dry, gained nine pounds in weight in the course of an hour by simple absorption from the atmosphere, and this gain varied with different qualities of earth in proportion as they were more or less productive. The lesson to be derived is obvious — always bearing in mind that soil is best fitted for the simultaneous action of air and water, which will retain about forty per cent. of the latter."

Carbolic soap and water are said to destroy mildew on Roses.

THE FLOWER GARDEN.

It should be now ascertained what we want for every flower-bed about the place — how many plants and what kinds; when annuals, or such as have to be raised from cuttings. Knowing what we need, next see how many we have, and if deficient in any, get up what is wanted. We have often asked gardeners, in the spring, about how many plants they required for bedding purposes, and have been told they "did not know;" and still they would be propagating great quantities of different things. This looks to us like groping in the dark, and is the reason why so often a good deal of bedding is seen with very little effect. They have many easily propagated plants, but few of such things as are a little more difficult, but which, if a few more had been grown, would have imparted a greater effect to the others. This preparation before hand is also as necessary in getting up plants for fall and winter decoration of the green-house as for the flower garden. Soft-wooded plants of all kinds, such as Stevias, Salvias, Eupatoriums, Libonias, and such like, require to be propagated now. Hard-wooded plants also require suitable treatment to make them flower at particular times. Camellias, for instance, if wanted to flower early, require to have their wood early matured a year previous, as forcing the buds open with heat is never attended with much success. Every gardener and amateur should keep a diary, and note everything which will prove of any service in the future. The extreme cheapness of most of the horticultural periodicals nowadays gives us every facility for getting the practice of others to assist us with our own, therefore giving us a chance for succeeding in every branch.

What we do not know some others do; what we have failed with, some one who has succeeded tells us. The poorest work on horticulture we have ever seen told us something we did not know or had forgotten.

TO GET RID OF HOUSEHOLD PESTS.

I have not seen a bedbug or flea in my house for many years. If an army of them were to be brought in, mercury would speedily exterminate them; but I think cleanliness the best and perhaps the only preventive. The common house-fly I do not molest, believing that it more than compensates for its trouble by clearing the atmosphere of effluvia and the animalcules which always arise from the putrefaction of decaying substances during warm weather.

So also with the birds, which are quite numerous here during the summer. Instead of shooting them or setting up scarecrows to frighten them away, I throw out every possible inducement for them to build in my fruit trees. The birds capture a large share of the insects in the larva state, and thus the millers are prevented from depositing eggs for future worms. As to the loss of fruit by the birds, the latter are always sure to be on hand in force in the season of ripe fruit, whether they come early to take the worms or not.

For the residue of insects that infest my vegetable garden, I find that the laboratory of the chemist furnishes materials fatal to them all, among which white hellebore and cayenne pepper are of the most utility. The bug or worm which can not find vegetation unflavored with these articles will seek its breakfast elsewhere and leave a garden unmolested.

A few drops of carbolic acid in a pint of water will clean house plants from lice in a very short time. If mosquitoes or other blood-suckers infest our sleeping rooms at night, we uncork a bottle of pennyroyal, and these insects leave in great haste, nor will they return so long as the air in the room is loaded with the fumes of that aromatic herb. If rats enter the cellar; a little powdered potash thrown into their holes, or mixed with meal and scattered in their runways, never fails to drive them away.

Cayenne pepper will keep the buttery and store-room free from ants and cockroaches. If a mouse makes an entrance into any part of your dwellings, saturate a rag with cayenne in solution and stuff it into a hole, which can be repaired with either wood or mortar. No rat or mouse will eat that rag for the purpose of opening communication with the depot of supplies.—*Scientific American.*

THE FASHION IN FLOWERS.

Once more fashion in the matter of flowers is somewhat opposed to Nature. After having rivaled the splendor of the parterre, the maker of artificial flowers, thinking, doubtless, to improve on simple imitation, and also perhaps the better to harmonize his productions with the glitter of gold and silver, so much used, is now making leaves and blossoms in a style that is too meretricious to please true taste, savoring as it does far too much of the theatrical. Therefore we find not only velvet and satin leaves and flowers to suit the costumes with which they are worn—grasses, berries, and leaves of gold and silver, and petals profusely powdered with frost—but also leaves sparkling with gold dust, and a metallic radiance about the green more suitable to the foliage of a transformation scene than

to the toilette of a modern Parisian. The flowers made and sold in England are often enough of this anti-natural style, which was always much less common here. Some of them are pretty as novelties that are not likely to be long in fashion. The dark metallic green foliage is used to relieve the brilliance of the rest, but it is speckled with gold nevertheless. Ribbon and lace are often mixed with flowers to be worn in the hair, while the nosegay for the front of the dress is tied together with broad streamers. Bouquets of artificial flowers, made up of sprays and branches of different sorts, are prepared for presents, and may be taken to pieces afterward and used to trim the dress or decorate the hair. The prettiest garlands for the apron and the most becoming wreaths are made of the Snowball plant, with frosted leaves; the Oleander with foliage of velvet and satin mixed, sprinkled with gold; of the mild Chestnut, of monthly Roses, of Violets, and of white Catalpa blossoms with the seeds and pistils of silver and the leaves powdered with silver dust. Silver and gold Blackberries and Ashberries are charming, mixed with tinted leaves. Camellias are very fashionable once more, and again add their loveliness to the adornments which crown the graceful heads of the fairer portion of our social world. The wreaths are made rather high, though fitting closely to the head; they are often composed of two sorts of flowers and formed like two wreaths, one over the other. A narrow fillet of Parma Violets may be surmounted by white Camellias, yellow Jasmine by Jardiniers, gold and silver Blackberries by wild Roses, pink Heath by gilt Ferns and grasses, the pale blossoms of the Hydrangea by Damask Roses.—*Warehousemen and Draper's Journal.*

WORDS.

The wind blew out of a cloud,
Which was folded like a shroud
Up in the chilly air,
And shook the woodlands bare.
The Thistle-down was white,
As though it had taken fright.
Up through the air it sped,
The ghost of a blossom dead—
Up like a white balloon,
Or miniature moon,
It sailed and sailed away,
To the distance dim and gray.

Its freight was a tiny seed;
Within its walls a weed
Was waiting for the sun and dew
And rain to let it through.
It could not always dwell
In such a narrow shell;
It fell to the ground at last,
And when the winter passed,
And the robin red-breast's glow
Melted the lingering snow,
An angry Thistle was found,
With its bayonet in the ground.

Our words are like the seeds
Which blossom in flowers or weeds;
We blow them from our lips,
They go to the mountain tips,
They go to the valleys low,
They melt not with the snow,
They are the tiny seeds,
Which bear the fruit of deeds.
Shall we sow Roses sweet,
And Lilies under our feet,
Or Thistle-down with a seed
That bears a noxious weed?

SUNNY ROOMS MAKE SUNNY LIVES.

Light is one of the most active agencies in enlivening and beautifying a home. We all know the value of sunlight as a health-giving agent to the physical system; and it is not less so to our moral and spiritual natures. We absorb light, and it nourishes us with strange power. We are more active under its influence—can think better and work more vigorously.

Let us take the airiest, choicest and

sunniest room in the house for our living room—the workshop where brain and body are built up and renewed. And let us there have a bay window, no matter how plain in structure, through which the good twin-angels of nature—sunlight and pure air—can freely enter.

This window shall be the poem of the house. It shall give freedom and scope for eye and mind. We shall hang no picture on our walls that can compare with the living and everlasting pictures which God shall paint for us through our ample window. Rosy dawns, golden-hearted sunsets, the tender green and changing tints of spring, the glow of summer, the pomp of autumn, the white of winter, storm and shine, glimmer and gloom—all these we can have and enjoy while we sit in our sheltered room as the changing year rolls on.

Dark rooms bring depression of spirits, imparting a sense of confinement, of isolation, of powerlessness, which is chilling to energy and vigor; but in light is good cheer.

Even in a gloomy house, where walls and furniture are dingy and brown, you have but to take down the heavy curtains, open wide the window, hang brackets on either side, set flower-pots on the brackets and ivies in the pots, and let the warm sun stream freely in, to bring health to our bodies and joy to our souls.

Earth-worms.—An invention is advertised and commented upon in England for preventing worms from entering pots. It consists chiefly of a piece of perforated metal placed over the holes beneath the drainage material used. We use hot water to kill earth-worms—as hot as can be endured by the hand. This kills them instantly, and will not injure the plant roots.

Editorial Portfolio.

THE "BIG TREES" (*SEQUOIA GIGANTEA*)

We present to our patrons for our frontispiece, this month, a fine and properly grown specimen of one of these famous and remarkable trees. Unlike the growth of this tree in its native or wild condition, the present illustration is clad with its branches down to and sweeping the ground. In the virgin forests where this wonderful tree flourishes, and sometimes attains in height 400 feet and over, and 30 feet round at its base, owing to the denseness of vegetation there, as well as the number of its own kind of all sizes, its stem or trunk does not show any branches nearer the ground than from 50 to 100 feet. In the East and in California this highly valued tree has now been raised from the seed for about fifteen or twenty years, and in many parts of the States there are to be found splendid specimens of it measuring near the ground four or five feet in circumference. We now have a few in this city more than a foot in diameter. There are several groves of these mammoth trees in this State, the chief of which are in Mariposa, Calaveras, Tuolumne, and Tulare Counties. There are over 400 trees in each grove. With the exception, perhaps, of the Boabab tree (*Adansonia digitalis*), these magnificent trees of California are the most ancient and grandest in the world, although some species of the Gum in the forests of Australia are said to excel them in point of height. These glorious trees are cone-bearing evergreens belonging to the botanical genus named *Cupressus* (Cypress) by Linnæus. After the time of that naturalist, his genus of the *Cupressus* was divided, so that the mammoth tree would come under the name of the *Taxodium*, which, about the year

1850, was again divided by Endlicher, the German botanist, and the Redwood-tree was declared to belong to a new genus, called *Sequoia*. These trees first came to the notice of the public in 1853, and are related in the closest manner to the Redwood, and are found only in California on the western slope of the Sierra Nevada ranges, between latitudes 34° and 41°. The cones are not much larger than a hen's egg, whereas the cones of many smaller conifers of the coast are larger than Pineapples. The seeds are not more than a quarter of an inch long, a sixth wide, and almost as thin as writing paper. The bark is reddish brown in color, of a coarse, dry, stringy, elastic substance, and very thick; on the largest trees not less than eighteen inches. The wood is soft, elastic, straight-grained, free splitting, light when dry, and red in color. It bears a close resemblance to Red Cedar, but the grain is not quite so even. The wood is very durable. The rings of one of these trees have been counted, and its age was variously estimated, according to the different modes of counting, at from nineteen hundred to three thousand years. As John S. Hittell says, in his excellent book, "The Resources of California:" "Probably its age was about 2,000 years. It sprouted while Rome was in its glory. It is older than any kingdom, language, or creed of Europe or America. It was a large tree before the foundation of the Christian church, and was 150 years old before the period of modern civilization began. Twenty centuries (using the language somewhat of the great Napoleon when he looked down from the Pyramids of Egypt) look down upon the tourist from the tops of the larger trees; and some of the little ones will still flourish for a thousand years from now, when all our present kingdoms and republics shall have disappeared, and our political and social systems shall have been swept away as full of evil, and replaced by other and better systems, under which men will live in civilized society without each being forced to rob his brother by means more or less legal and respectable."

PAINTING AND HORTICULTURE.

In addition to the fine and interesting galleries and stores, containing pictures, of Richard Roos & Co., Morris, Schwab & Co., A. Winter, and others, the former of which are so liberally provided, and opened gratis to the public, we take pleasure in pointing out to the favor and notice of our citizens the establishment of M. D. Nile, 223 and 225 Kearny Street. This establishment has been a leading one in art from a comparatively early date, and many beautiful, artistic, and valuable productions of our first-rate painters have been and still are presented to the admiration of the passing multitude, and to those who take time to enter and examine the pleasant gallery of generally choice pictures which it holds for exhibition. It is true that the great mass of the people, the underbred, the uncultivated, those that are unfortunately gross in ignorance, are slow to understand and appreciate such noble and beautiful works of pictorial art as are placed before them for their gaze in these depots of painting, whether in oil, water colors, or engravings, but, in the course of time, the impressions produced in their minds and feelings by these attractive objects must be favorable and improving for them. Now this will surely take place in a greater or less degree, even with those who may be said to possess no organization for art, and even they must be directly or

indirectly benefited by this school of it especially. Henry Ward Beecher says, in one of his sermons, "A gardener receives from a botanical traveler, for the first time, in a little pot, a slip of Spruce or Fern; and one looking at it, says, 'What did you give for that little thing?' 'Twenty-five dollars, sir,' is the reply. 'What under the sun made you give twenty-five dollars for that little slip of evergreen in a two-inch pot?' 'Well, it is the *Sequoia gigantea*. There are trees of that name in California. They are enormous trees that shoot up 300 or 400 feet into the air. This is the beginning of another. It is not very big now, but give it root-room and in time it will be as big as the others." Thus it is with the uninformed and disadvantaged masses. These efforts, and mostly excellent works of the pictorial craft, so conveniently, liberally, profusely, and cheaply placed before their vision in the store windows and galleries, will gradually and surely educate them to a certain amount of spirituality, refinement, and benefit to their moral nature. These lower and grosser classes are not to be estimated as valuable for what they now show themselves to be, but for the capacity they have in them, when they have some chance of elevation, by beauty, loveliness, truth and virtue being paraded before them, even in store windows. Those who labor or take delight in matters of the fine arts, such as music, painting, sculpture, and such like; and may we not say, also, those who are forwarding the theory and practice of horticulture, in works calculated to advance the cultivation of flowers, fruit, etc.; are they not all conferring benefits on the community, in promoting refinement, polish, more of purity, intellectual, and moral advancement, rather than the encouragement of the grosser and less moral qualities of our nature? Mr. Nile will always be found ready to impart any information about the pictures in his gallery, etc., to his visitors, with pleasant attention and politeness.

A MANUAL ON THE CULTURE OF SMALL FRUITS.

Strawberries, Raspberries, Currants, Gooseberries, Blackberries, etc. How to raise and market them. Mailed on the receipt of price, 50 cents. By E. P. Roe.

Although our climate in California is different from that of the East, still the general principles of culture are the same, and many of the sorts of small fruits recommended are suitable for us, and, indeed, we are cultivating some of them quite successfully. We might well test a few of those which we have not yet here, and especially some of the newest and best. This is a neat, well written work, and the print is plain and large. It treats on different soils and their best fertilizers, when to plant, how to obtain plants, what kinds to plant, how to plant, modes of culture, raising new varieties, different varieties described, propagation, culture for fruit, field culture, enemies, Roe's Seedling Gooseberry, packing plants, and profits of small fruit culture, etc. We think that many points contained in this practical and instructive manual will be worthy of the attention of our California cultivators.

DEPOT OF WILLIAM ROBERTSON, 106 CALIFORNIA MARKET.

This experienced and accommodating nurseryman and florist is well acquainted with the requirements of the public in his fascinating and now happily much extending line of business

here. At his stand may always be found a large and excellent variety of shrubs, plants, flowers, etc., well grown by himself at his nursery, west side Folsom Street, between Nineteenth and Twentieth. There can also be found there graceful and elegant bouquets, wreaths,. crosses, and flower baskets. Mr. Robertson is likewise agent for the well known and extensive nursery and floral establishment of F. Lüdemann, proprietor of the Pacific Nurseries, Baker Street, between Lombard and Chestnut, near Presidio, S. F.

CATALOGUES RECEIVED.

"Vick's Floral Guide, No. 2, for 1876," Rochester, N. Y. Work in the fields and gardens has been delayed longer here than usual this spring, on account of heavy rains, and, for this climate, severe frosts, which last have injured, if not destroyed, many tender flowers that have generally stood well our winters out of doors. The Rose Geraniums and Heliotropes have especially suffered. They, with some other exotics, have been sadly nipped, but then they can be easily replaced without any great cost. The above excellent Guide has reached us very aptly before much of our planting season has expired, and the information it contains will be available to many who are so fortunate as to obtain it, by applying for it. It treats on "Pleasant Homes," "Useful Facts and Pleasant Gossip," "True Love of Flowers," "The Dahlia," and many other useful and interesting floal and vegetable topics.

In addition to the above, Mr. Vick publishes a "Priced Catalogue" containing a full list of flowers and vegetables, with brief descriptions, with prices attached, and descriptions of all the new flowers and vegetables, which he sends free to all who desire it. His Pansies are very fine and varied, but the most superb and valuable of all, we consider, to be the Emperor William. It is very hardy, a constant bloomer, very distinct, and of the most lovely blue, with a gold centre. We strongly recommend this beautiful sort to all. It may be procured at nearly every professional florist's establishment, both East and West.

"Descriptive Catalogue of Fruits, Ornamental Trees, Shrubs, Bulbs, etc., 1876–77, No. 1," of Storrs, Harrison & Co.'s, Painesville, Ohio. This list is as full and complete as desirable for cultivators. It is illustrated by many fruits, flowers, evergreens, and ornamental trees, such as the Verseillaise Currant, Downing's Seedling Gooseberry, Mammoth Cluster Raspberry, Cut-leaved Weeping Birch, Kilmarnock Weeping Willow, Tom Thumb Arborvitæ, Oak-leaved Mountain Ash, Gem of the Prairies Rose, and Marechal Neil, etc.

"Catalogue of Bryant's Nurseries," Princeton, Ill., 1875–6. Mr. Bryant is the author of "Forest Trees," a good practical work on tree culture, with twelve full page engravings.

"J. M. Thorburn & Co.'s Annual Descriptive Catalogue of Vegetable and Agricultural Seeds for 1876." One of the largest collections to be found in the world, with many tested novelties, both of domestic and foreign origin. John St., N. Y. Also "Catalogue of Flower Seeds."

"Root's Garden Manual and Seed Catalogue for 1876," Rockford, Ill., with many excellent directions as to soil, manures, preparation of ground, seeds and sowing, cultivation, thinning, harvesting, storage and sales, hot beds, garden pests, kitchen garden, garden implements, etc.

"Catalogue for 1876, No. 4, of Hoopes Brother & Thomas," Cherry Hill Nurseries, West Chester, Pa., of Greenhouse and Bedding Plants, with rare Conifers, embracing descriptions of the most popular plants grown under glass, for various purposes; to which is added novelties for 1876, with cuts. All the above firms, connected with these catalogues, are highly respectable and thoroughly responsible, and we have no hesitation in guaranteeing the fulfillment of any representations made by them. With the above recommendation also we add the "Plant Catalogue" of F. K. Phœnix, of Bloomington, McLean County, Ill., including Plant Novelties, Greenhouse and Bedding Plants in eight classes, each arranged alphabetically.

1. New Plants.
2. Hot-house Plants and Bedders.
3. Greenhouse and Bedding Plants.
4. Leading Plants with Lists.
5. Vase and Basket Plants.
6. Hardy Herbaceous Plants.
7. Fruit and Vegetable Plants.
8. Summer Flowering Bulbs.

One of the most striking, brilliant, and beautiful flowers to be found in most of the collections both in the East and in California is the splendid *Tritoma superba*.

"Specialties for the Spring Trade of 1876." The Brighton Grape, a new seedling, the finest early Grape, also new Roses, Gooseberries, and Peaches, by H. E. Hooker & Brother, Hooker Nurseries, Rochester, N. Y. The Brighton Grape is a cross between the Concord and Diana Hamburg. Hooker & Brother claim for this Grape, first, excellence of quality; second, vigor and hardiness of vine; third, early ripening; fourth, beauty and size of fruit; fifth, beauty of vine and foliage; sixth, nativity in this country. This firm also bring into notice the New American Seedling Gooseberry, the "Downing." The fruit is large, two or three times the size of the old Houghton, color pale green, or whitish green, a great bearer, and of excellent quality for cooking and table uses. It is very productive, and it will make a most profitable market sort. It should be grown in rather a cool situation, and should have moderate pruning out of the weaker branches. It appears to us that we need a good healthy Gooseberry here, and a larger one than the Houghton, and one that is not subject to the mildew, like the English kinds. There is also another recommended by this firm, namely, "Smith's Improved." It is large, early, good in flavor, and very productive. Mr. Hooker presents us with two handsome engravings and likenesses of the above notable fruits. Our fruit cultivators should procure them for trial on this coast. The Roses are some of the newest and the best.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Knight, Van Mons, Rivers, and others, devoted the greater portion of their lives to the improvement of fruits. These benefactors operated in old countries, which possessed many fruits grown in many situations, and much under glass, and to a very considerable degree of perfection. If these eminent men and pomologists devoted their money and means to such good purpose in old countries, where all kinds of fruits are raised in great perfection, how much more meritorious and desirable is it for similar persevering, talented, and scientific fruit raisers here to adapt to their new homes all those fruits, both old and

new seedlings, which can be successfully naturalized. The improvement and naturalization of fruit by means of seed, while it affords the only true mode of "acclimatization," is looked upon with distrust and aversion by the ignorant and unthinking. The fact that the whole of the countless varieties of delicious Apples and Grapes, and the luscious Pears, Peaches, Apricots, and Nectarines, we now possess, have been originated from seed at one time or other, is either forgotten or ignored. Let any one interested in the subject inquire into the origin of many of our most valued old fruits, and they will find that they sprung from some chance seedling growing in some wild or other similar place, which had been rescued from obscurity and named by some observant person, and had thenceforth been increased by budding and grafting, and had been distributed throughout the civilized world.

The danger to be apprehended from the general practice of raising fruit trees from seed, is that the gardens will be filled with worthless sorts; but, as the operations of budding and grafting are simple, it appears to us that the evil would not be so very great, but that the young trees of inferior quality would be cut down and worked from others of approved excellence.

In no country in the world, probably, has the practice of raising fruit trees from seed been more generally adopted than in the United States, and nowhere else has it resulted in more triumphant success. The fame of the Newtown Pippin, New York Pippin, and other Apples is world-wide; we also excel in nearly all other fruits. Almost every State possesses special sorts adapted to its peculiar soil and climate, raised on the spot from seed, and which are, when sufficiently tested, increased by budding and grafting. The circumstances attending the settlement of all new countries are so far similar, that we may with confidence in California follow an example which has been productive of such important and beneficial results, and endeavor to secure a greater number of choice seedling fruits than we now possess, which being natives of the climate would be specially suited to our wants.

Among the objects which may be accomplished by raising fruit-bearing plants from seed, some one or more of which should be kept steadfastly throughout the pursuit, and the rules which should guide those engaged in it, we quote the following excellent remarks from the *Queenslander*, published at Brisbane, Australia, and which are pertinent to our present purpose:

1st. To naturalize any desirable fruit, rendering it productive in districts where from climatic causes it would not bear originally. This is being done notably with the Peach in the Brisbane district, where, within our recollection, there was only one sort which would bear, and now there are probably fifty distinct sorts, many of them of great excellence, the majority of which are seedlings.

2d. To improve upon existing kinds of fruit, in flavor, beauty, size, or hardiness.

3d. To originate varieties of existing kinds of greater constitutional vigor than their parent, and not subject to mildew, curl, worms, American blight, oidium, etc. It is well known that in the same soil, and under the same treatment, there are some sorts of Peaches which are much more subject to mildew, curl, and worms, than others; and that the same may be said of the Apple with reference to the American blight, and the Grapevine with regard to the oidium. It would, therefore, be an object wor-

thy of ambition, to raise seedling plants free from these pests, possessing all the good qualities of their parents which are subject to them. Much has been done in this direction in other countries, but we will only instance the Early York, a favorite Peach, very subject to mildew, from which Mr. Rivers has raised a seedling perfectly identical with the parent, except that the growth is more vigorous, and it is proof against mildew.

4th. To extend the season of ripening, by originating earlier and later sorts.

5th. To determinately root out all seedlings which, on fruiting, do not prove to possess some desirable quality not belonging to some existing sort in relation to the district in which it is raised.

6th. To communicate the particulars of every success to persons known to take an interest in the pursuit, so as to make sure that it is not overlooked, as it may prove of public advantage.

We hope to see in California more fruit cultivators paying attention to the raising of seedling fruits, more likely to agree with our soil and climate than most of those which are of foreign origin, and whose characters in many respects, but especially as to the time of ripening, have been changed, by being subject to the different conditions peculiar to our Pacific Slope as compared to the regions where they were originated.

To raise seedlings, we admit, requires much time, patience, perseverance, energy, and some pecuniary expenditure, and in, probably, 1,000 seeds planted of any variety of fruit, most likely not more than five or ten in that number, when they produce specimens, will be worthy of preservation and continuance; and not more than one fruit in that quantity of seedling trees or plants will, probably, be first-rate in quality. Still, if success is attained even against that large proportion and such odds, it is a triumph worth the labor and expense, and is conferring a lasting benefit on the community.

The severe winter here, with its heavy rains and unusual frosts, has kept back the Strawberry crop, and it will probably be quite late, as compared with former seasons, before we shall have any in market. At the end of last year (1875) they were unusually plentiful, cultivators having attended well to them and their irrigation, so as to be very successful in their last crops of this delicious fruit. We have on record in the HORTICULTURIST that last year the first Strawberries reached us on the 11th March. This year it will be most likely nearly if not quite one month later before they come in with reasonable prices, although we may have a few at fancy prices about the last of the month (March), or the beginning of April. In consequence of this almost blank time with regard to fruits (the first advent of spring), Apples, Pears (what few there are), and Oranges were about the last of March in great and active demand, and brought unusually high prices, and numbers of them were shipped to the interior cities and towns. The finest California Oranges brought on the 17th March $1 25 per dozen. By the box, good and choice Apples retailed at $2 50 to $3 50. The Sandwich Islands Oranges have failed much in their produce this year, and, besides, the California fruit being so greatly superior in quality, these Oranges from the Islands have but poor chance for a good market here. These Oranges are, compared with Southern California, less sweet and rich, being watery and nearly tasteless. We have had very few of them in San Francisco this year in comparison with other years.

Asparagus toward the last of March came forward still slowly, and brought high prices. Green Peas became quite plentiful and a further decline from the beginning of the month took place. The market was well supplied with Potatoes, but prices were maintained. By the single sack the best were not obtainable for less than $2 25 to $2 50 per 100 lbs.

Near the last of March the market was but poorly supplied with fruit, which is an uncommon thing for us at any season of the year. People are beginning to long for the advent of Strawberries, but none are expected before the first week of April. Apples were dear, and Oranges were steadily advancing, although they have been excessively high in price for several weeks. No further advance, however, was considered likely to take place in Oranges, as two car-loads of Mediterranean Oranges were *en route* to this city overland. They were from Sicily. This shipment will be unprecedented in years, and it will be due to the high prices of Los Angeles Oranges now ruling. They will come here from New York. The first cargo of the new Tahiti crop was expected early in April. This shipment of Mediterranean Oranges will probably be the first ever brought to this coast, and would not have been ordered if the Los Angeles crop had not been short, and the Tahiti crop late, causing an advance in prices sufficient to meet the heavy freight rates overland. The market was well supplied with California and Sicily Lemons, but the stock of Limes was quite light. Apples by the box retailed at $2 50 to $4. More Cucumbers had come to hand during the last week in March, but still brought fancy prices. Green Peas and Asparagus were more abundant and cheaper. Prices of Potatoes were maintained, and the best by the single sack commanded $2 50 to $2 75 per 100 lbs. The foreign Oranges to arrive were Palermo and Messina Oranges. These were to come in refrigerator cars. The steamer *Oriflamme*, from Portland, arrived with 1,897 boxes of Oregon Apples.

On the last day of March the first lot of Strawberries reached our market. Of course the price was of the fancy order, and those who invested in them had more regard to their novelty than to their size or quality. Those we happened to see in a fruit store were quite diminutive, and had a color between an old red brick-bat and a piece of stone coal. But we shall soon have better specimens, and of larger size and improved flavor, and with less acidity prevailing in them. The whole receipts up to the 2d of this month (April) did not amount to more than twenty pounds. Before this number of the HORTICULTURIST is issued there will be plenty. Two cargoes of Tahiti Oranges, in all 455,000, the first of the new crop, arrived on the 30th of last month (March). They were unripe and sour, rather like the Strawberries at that time, and did not have much effect upon the sale of California fruit. The same vessels brought consignments of Limes and Cocoanuts. Mediterranean Lemons continued to arrive overland, and two car-loads of Sicily Oranges were expected by the same route. The steamer Orizaba arrived with 546 boxes of Los Angeles Oranges, which found a ready sale. The last shipment (the last of March) of Oregon Apples brought exceedingly high prices, and by the box a good to choice article now retails at $3.50 to $4.50, while medium qualities sold at $2.50 to $3. Pears were very scarce. Hot-bed Cucumbers came along regularly, but did not get below 50 cents a piece up to the end of March.

Asparagus and Green Peas, especially the first, were much more abundant and cheaper. Potatoes were firm, and by the single sack the best Petaluma brought $2.50, and Nevada and Utah, $2.75 per 100 lbs.

We note the arrival of Dried Peaches from Salt Lake (skins on); price, 12½c. Howe & Hall furnished the following: Apples, $2 to $3 50 per box. Eastern Cranberries, $13 to $14 per bbl. Oranges, Los Angeles, $20 to $75 per M. Limes, $15 to $20 per M. Bananas, $2 50 to $4 per bunch. Pine-apples, $6 per dozen. Cocoanuts, $7 to $8 per 100. Dried Fruit—Apples, 10c. per lb.; Peaches, 11 to 12½c.; Peeled, 18 to 20c.; Pears, 10 to 12½c; Plums, 5 to 6c.; do., pitted, 16 to 17c.; Prunes, 12½ to 17c.; Apricots, 12½ to 15c.; Figs, white, 12½ to 15c.; black do., 6 to 10c.; California Raisins, 6 to 11c. Vegetables—Cabbages, $1 25 to $1 50 per ctl.; Cucumbers, $2 to $4 per doz.; Asparagus, 10 to 15c. per lb.; Marrowfat Squash, $20 to $25 per ton; Rhubarb, 12½c. per lb.; Green Peas, 4½ to 5c. per lb.; Garlic, 5c. per lb.; new Potatoes, 6 to 8c. per lb.

Editorial Gleanings.

Flowers at Funerals. — Somebody has been showing that the expense of a first-class funeral in New York is something over two thousand dollars, monument and all. Of this the cost of flowers is set down at a hundred dollars. Now, a hundred dollars spent in flowers may be a piece of extravagance or economy, as people choose to regard it. But we venture to say that twenty-five dollars judiciously expended will make, we will not say a better display, but in all respects a more beautiful and appropriate token of esteem and affection. Immense stacks of flowers are bad enough in churches, but at a funeral they are exceedingly out of taste. What is wanted is some proper token of affection on the one side, and on the other some suggestive symbol of an unfolding and beautiful hereafter. But how stands the case when all taste and simplicity, and especially when all true suggestiveness, are sacrificed to an immense show? Think of those hideous crowns done up with Violets and Pinks which it is safe to say no saint would wear, to say nothing of mortals. And think of flowers being packed together like so many sardines!—beautiful Pinks and Lilies enough to occupy half the room being gathered up in the compass of a square foot. It is as if a milliner, in order to make a big display on opening day, should gather up in some huge bee-hive 200 or 300 hats and feathers, all crushed and crowded, in order to suit her fancy. How would the ladies like that as a specimen of taste? But there would be much more taste in it than there is to much of this mussing and crushing of flowers by as much as a hat is a less delicate and beautiful object. If milliners could be paid for such an abomination as we have spoken of, they would probably be guilty of it. And this is just the real trouble with the florists; it is a question of sticking in as many flowers as possible at so much a piece. And the result is so much ugliness, and a hundred dollars to pay for it.—*Church and State.*

Verbenas.—Fill shallow boxes (from four to six inches deep) with light peaty soil, first arranging drainage and holes in the bottom; make the surface smooth and moderately firm. Soak the seed for several hours; sow thinly and cover lightly with very fine sandy soil. Place in a moderately warm place, shaded

from the sun, and kept constantly moist, but not *wet*. When up, place in the light, in an east window, shading from direct sunshine, and water cautiously, using a spoon and applying tepid water around the plants, and upon the surrounding soil. When sufficiently strong pot off singly into two inch pots (or little thumb pots as convenient) using light fibrous soil with a free admixture of sand, and place the pots in a box, surrounding each one with moist soil, sand, or moss. Keep near the glass still, keeping rather close and moist, by covering the box with a pane of glass, or each pot with a hand-glass until the plants are well established. Shift into one size larger pots every two or three weeks, or as the previous size becomes filled with roots, but before they become matted. This transplanting adds greatly to the "stockiness" of the plants. Gradually inure to the outer air by placing outside or raising the sash on fine days. Finally plant out in beds made light with fibry soil and sharp sand, and enriched with old well-rotted manure.

Sensitiveness of Carniverous Plants. —The wonderful sensitiveness of carniverous plants, when a substance is placed on them which excites their peculiar glands, may be considered as among the most remarkable of all natural phenomena. If a little bit of human hair, measuring only 8-1000 of an inch in length, be placed on one of tentacles of the Sundew (*Drosera rotundifolia*), which fragment of hair only weighs 1-7840 of a grain, the tentacles of the leaf will curve inward. Now, a bit of hair 1-50 of an inch in length, and therefore immensely larger than the one exciting the plant, can not be appreciated when placed on that most sensitive of all organs, the tongue. But if the excitable character of the Sundew is manifested by this physical cause, its sensitiveness is shown to a much greater degree when a chemical substance is applied to it. If a solution of phosphate of ammonia be placed directly on the gland of the other tentacle—a quantity represented by 1-153600 of a grain is sufficient to produce motion. But the inconceivably small quantity of 1-19760000 of a grain of the same substance in solution, under peculiar circumstances, imparted action to the plant. This is a degree of sensitiveness far surpassing that of any method of analysis, with the exception of the spectroscope.

Geraniums. — The very best soil for this seed is composed of one-third good garden loam, one-third leaf mold from the woods, one-fourth decayed wood fibre, such as we obtain from the hollows of old trees or beneath the chopping log in a long used wood pile, with one-sixth sand. Use boxes from four to six inches deep or less (as large boxes are heavy and inconvenient to handle). Supply good drainage at the bottom, on which place coarse screenings of any kind, filling to half an inch of the top with the soil named, sifted through a quarter-inch screen. Press the surface uniformly and firmly, and saturate with boiling water; dry off a little, and then measure off into squares half an inch apart. Place a seed upon the line at the point of intersection and with the tips of the finger press each one so that it rests in a tiny hollow, just perceptible beneath the surface. Sift the same fine soil lightly over the entire surface, using a gauze screen. Keep the soil moist — never wet, and place in a south window in warm sun-

shine. They will germinate in a week as a general thing. Cover carefully at night and remove to a place secure from frost, and when the little plants have formed their second or true leaves, transplant to two-inch pots, from these to three-inch, and so on.

Smoke as a Protection against Frost.—The production of artificial clouds of smoke is a common appliance against frost in France and Germany. Mons. Vinard has recommended a plan which is perfectly successful, and which consists in carefully mixing gas tar and sawdust and old straw, and piling up this mixture in large heaps in the vineyards. The mixture remains inflammable for more than a fortnight, in spite of rain and weather. When required for use smaller heaps are made from the large ones, about two feet in diameter, and distributed in and around the vineyard. If there is little wind these heaps burn freely for about three and a half hours, and produce a very dense smoke. The artificial cloud which thus enwraps the vines considerably decreases the radiation from the ground, and therefore prevents frost, which is greatest toward morning during calm spring nights.

A New Shrub.—*Viburnum dilatatum*, the *Botanical Magazine* says, is a hardy, white-flowered Japanese shrub, with large leaves somewhat like those of the common Hazel-nut. There are ten or twelve Japanese species of Viburnum, including the present plant, which promises to be a welcome addition to our gardens. Some of the Viburnums owe much of their beauty to the fact that they bear enlarged but abortive flowers in a way analogous to those of the Hydrangea. In the present species, however, the flowers are all normal, forming dense rounded clusters at the apex of the downy stem.

Double Begonias.—The English *Journal of Horticulture* says: The double-flowered Pelargoniums and Cinerarias are to be followed by double-flowered Begonias, some varieties of the tuberous-rooted section being announced by M. Lemoine of Nancy. It is only the male flowers of each fascicle that are double, the female flowers retaining their normal form. Of these varieties B. Gloire de Nancy is in color rich vermilion, and B. Lemoinei orange scarlet. They are to be distributed the ensuing season.

METEOROLOGICAL RECORD,

For the Month ending March 31, 1876.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 423 Washington Street, near the Post Office).

BAROMETER.

Mean height at 9 A. M.	30.10 in.
do 12 M.	30.10
do 3 P. M.	30.09
do 6 P. M.	30.08
Highest point on the 27th at 12 M. and 3 P. M.	30.26
Lowest point on the 8th at 6 P. M.	29.69

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	53°
do 12 M.	57°
do 3 P. M.	58°
do 6 P. M.	53°
Highest point on the 19th at 12 M.	70°
Lowest point on the 10th at 9 A. M.	43°

SELF-REGISTERING THERMOMETER.

Mean height during the night	44°
Highest point at sunrise on the 23d	51°
Lowest point at sunrise on the 10th	35°

WINDS.

North and north-east on 10 days; north-west on 6 days; east on 2 days; south and south-west on 8 days; west on 5 days.

WEATHER.

Clear all day 13 days; cloudy all day 8 days; variable on 10 days; rain on 11 days.

RAIN GAUGE.	Inches.
1st	0.32
2d	0.99
3d	0.38
4th	0.07
5th	0.20
6th	1.21
7th	0.49
8th	0.24
12th	0.28
13th	0.07
29th	0.12
Total	4.37
Previously reported	20.40
Total for the season	24.77

Mt. Tamalpais, Marin County, Cal.

Mountain Scene in California.

THE

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BEDDING PLANTS.

BY F. A. MILLER.

The term "bedding plants" is applied to a class of plants which are particularly effective when arranged in groups or masses in the flower-garden, or upon the lawn or grass plot. They consist mostly of herbaceous plants and annuals of rather low growth, some of which are cultivated for their flowers, while others are highly esteemed for the richness of their foliage, the latter being now most extensively in use for Ribbon-gardening, forming the most attractive features in the gardens of the East and Europe. On this coast very little attention is paid to this class of plants for bedding purposes. Here and there a bed of Verbenas, Pansies, and Petunias may be seen, but rarely do we meet with the more delicate foliage plants which are so essential for effect. Several reasons can be given for this deficiency in our gardens: *first*, I must confess that Ribbon-gardening requires close attention in order to keep colors distinct and the plants neat and compact, which involves a certain amount of expense for labor to which our California men of means object, because they can appreciate other extravagances much more than a flower-garden; and *second*, it is quite necessary, in order to keep most bedding-plants in good condition, that they should be replaced by young plants every year. This necessity is apparent to every one in the East, where this class of plants is destroyed every winter season by excessive cold, but here in this mild climate, where most of them withstand the winter, great objection is made to the digging up of old unsightly plants to make room for young stock at an additional expense, and the result is a failure in nine cases out of ten. In course of time this sort of economy will probably give way to a better appreciation of a well kept garden; and, in view of this, I would throw out a few hints which may be serviceable.

In the formation of a group of bedding-plants it is immaterial what outline is given to the bed, as long as some harmony is preserved with the extent and the general aspect of the garden. In all cases the tallest and most robust growing plants should be placed in the centre, and the lowest growing ones around the outside, allowing those of intermediate growth to fill up in such

way as to produce a gradual descent from the centre to the edge of the bed. The groups may be made up of three, four, or more sorts of plants, of as many distinct colors in flower or foliage, each row representing a certain color. For instance, any of the following will do for centres of groups: Perennial Phlox, Zonale Geraniums, Fuchsias, Campanula, Delphinium formosum, Gladiolus, Ageratum Mexicanum, Zinnia elegans. For second row next to the centre: Salvia splendens, Gipsophylla, Pentstemon, Bouvardia, Cuphea, Antirrhinum, Coreopsis, Aquilegia, Lupinus, etc. For third row: Phlox Drummondii, German Asters, Balsams, Celosia, Iberis, German Stock, Cineraria, Calceolaria, Carnations, etc. For fourth row or border: Aubrietia, Myosotis, Daisies, Portulacca, Pansies, Alyssum, Gazania, Nemophila, Verbenas, Oxalis, etc. All of the above are cultivated for their flowers, and as most of them produce flowers of different colors, care must be taken that only those of the same color are selected for their respective positions.

The following foliage plants are well adapted for Ribbon-gardening. For the centre: Arundo donax variegata, Canna, Perilla Nankinensis, Artemisia, etc. For second row: Coleus, Achyranthes, variegated Zonale Geranium, Centaurea, etc. For third row: Pyrethrum aureum, Gnaphalium, Alternanthera, Sedum variegata, etc.

Very desirable groups may be made up of the following plants: Group 1, centre, Heliotrope, surrounded with scarlet or rose-colored Geraniums, bordered with Gazania splendens (flowers yellow); group 2, centre, red-flowering Lantana, surrounded by white-flowering dwarf Chrysanthemum, bordered with blue-flowering dwarf Ageratum; group 3, centre, Fuchsia corymbiflora, surrounded with Salvia splendens, bordered with Centaurea candidinima; group 4, centre, Dracæna indivisa or Australis, surrounded with variegated leaf Geraniums, bordered with blue Lobelia; group 5, centre, Coleus Vershaffelti or Achyranthes, surrounded with Cineraria maritima, bordered with Pyrethrum aureum; group 6, centre, dark blue Heliotrope, surrounded with orange or orange-red Lantanas; third row, white Bouvardia, bordered with light blue Lobelia or Myosotis.

[TO BE CONTINUED.]

BENEFITS OF FORESTS, WOODS, AND BELTS OF TREES TO CALIFORNIA.

BY NATURALIST.

The vast coast forests are being rapidly consumed for the various purposes for which lumber and timber are used. It will not be many years before our forest lands will be denuded of these valuable and gigantic vegetable productions. What is to take their place? Is it not high time, that, while these forests are being rapidly consumed, we should be substituting for them other trees suitable for our wants, and which will quickly supply their places? We are glad to find that this good and important work has within a few years past been begun. But it is only, we may truly say, just commenced, and is not carried on on so great a scale as it ought to be. There are immense tracts of country in our promising State still destitute of trees. They have a barren and unpleasant aspect. How much can they be improved by the judicious planting of suitable trees! The magnitude of trees, and the extent which they cover when they form forests or woods, make them quite a prominent and delightful feature in the landscape; and

they are quite as important as their conspicuous appearance would seem to intimate. The woods are indeed the supreme rulers of the plant-world, and the life of other plants and fruit-trees; and the prosperity of man himself is most intimately connected with their existence.

A wooded soil is favorable to the production of springs; also, that the continued existence of moisture in woods, and the constant evaporation from them, will produce a cooler atmosphere, and therefore a lower degree of temperature in a country where they abound. The ocean, winds, and woods may be regarded as the several parts of a great distillatory apparatus. The sea is the boiler in which vapor is raised by the solar heat; the winds are the guiding tubes which carry the vapor with them to the forests and mountains, where a lower temperature prevails. This naturally condenses the vapor, the showers of rain are thus distilled from the cloud masses, which float in the atmosphere, by the woods beneath them. The grateful moisture descends upon the thirsty landscape, replenishing its numerous springs. This we have noticed all up our north coast and counties when traveling there during our rainy season. More rain always falls there than in the inland counties, or where the hills, mountains, and plains are devoid of vegetation. The little streamlets which issue from these forests continue to flow a great portion of the year, and a confluence of their waters forms brooks and rivers, the natural arteries of a country. When a country is deprived of its forests, springs, and rivulets, it becomes exhausted, and the climate is rendered warmer and drier. This explains the reason why the climate of ancient Britain and Germany, at the time of Cæsar, resembled that which Sweden chiefly possesses. The forests were then extensive, and the wood-cock, stag, wolf, bear, the wild boar, and wild cattle made them their home, as now we find them in some of the woods of Sweden. So, also, the climate of Greece, in Homer's time, was like that of modern Germany, and now produces the Orange and the Grape. The relative dependency subsisting among the different plants of a landscape, and their relation to the soil, can only be understood completely by reference to first principles. A wood, through the roots of its trees, as well as by its thickness or grass covering, binds together the soil on the declivities of the mountains, and thus in the most simple and natural manner strengthens them. If we take the wood away the springs are dried up, and the moss or grass covering disappears. Woods are also useful along the seashore where the coasts are low and sandy, as their roots bind together the loose sand, and prevent its being drifted inland by the sea breezes. A portion of our Golden Gate Park is now beginning to show the benefits of tree planting in this respect. In America, in general, and also in many parts of California, we are in danger of losing sight of the utility of the woods. We are too anxious to convert the land which they cover to agricultural purposes; we look upon them too much as an incumbrance on the soil, and their cutting down is a mere question of dollars and cents. Hence, the woods are disappearing on all sides where nature has placed them, and this, also, on a much too sweeping and formidable a scale. The denudation should be done on a more moderate scale, and most of the waste places of our slope should be planted here and there with suitable trees, to form protective woods and

shielding belts to houses, cities, orchards, and gardens.

Let us, then, cultivate trees and forests. If we do not desire California to be unhealthy, our summers to grow hotter in the valleys, and our winters frostier and colder, then let us be up and stirring in our rainy seasons to plant trees all over our State. We have been too neglectful of this in our Legislative capacities. It is true the desire for profit from fruit culture has induced many of our people to plant orchards of all kinds of fruit. This is helping the matter in some degree. But above all we should plant abundance of shade trees. Let us cover our plains with them. Our soil and climate make them grow with marvelous rapidity, and therefore there is every encouragement to go extensively into this beneficial measure. Eucalyptus, Cypress, and Australian Acacias, etc., make enormous growth in a very few years. Every person with a country home and a small piece of land may live under the grateful shade and prolific productions of his vines, shade and Fig-trees, as well as if he owned a large tract, raising timber and posts for many useful purposes.

We have it demonstrated in many places in various sections of the State that the Eucalyptus can be raised without irrigation after the first year. And when the tree can get finely started, it can reclaim much of our bare land, that, when beautified in this way by forest trees, becomes very valuable. And as a sample of what can be done without irrigation with the Eucalyptus, we have the ten-acre park at Wilmington, belonging to Honorable B. D. Wilson. These trees were set out about two years ago, and are now thirty feet in height, and every tree shows a healthy growth.

NATURAL AND ARTIFICIAL DISTRIBUTION OF TREES AND PLANTS.

BY A BOTANIST.

It is an interesting study to observe the various distinctive and peculiar trees and plants in different parts of the earth. Africa, for instance, has a rich tropical flora of her own, but it is less known, of course, owing to much fewer explorations there than in many other portions of the globe. Compared with other regions, there have been fewer accurate botanical descriptions of this quarter of the world. African explorers have rarely been technical botanists, and the few physiological botanists who have been great travelers have not yet discovered the treasures that must exist in the lands recently visited and approached near the equator. But this work is now being bravely forwarded. More is known of the west than of the east coast. Most of the tracts yet visited on the east side, and richest in peculiar forms, have been too much above the level of the sea to allow a growth of tropical vegetation, that should compare with that of India, the Indian Archipelago, or Brazil. It would seem that the plants of the east and west sides of equatorial Africa are really distinct. On the eastern side, where Africa touches Arabia, the flora of the coast is common to the two countries. The Euphorbia tribe, however, is essentially African, and forms a connecting link. The varieties are many, but they are not generally handsome plants. On the west coast is found the Baobab (*Adansonia*) of Senegal, the circumference of whose stem is sometimes double the height of the tree. There is also the *Pandanus candelabrum*, rising solitary on the plains with its long forked branches and stiff leaves; the Palm oil tree on the coast, and the Mangrove in

the water. Tropical Arabia is remarkable for its balsams and richly-scented gums, as the islands of the Indian Archipelago for spices, and South America for its gorgeous colors. Arabia has, also, Figs, Mimosas, and Date Palms. Out of the tropics, both northern and southern Africa are rich in their own forms of vegetation. Toward the equator the tropical character is soon recognized. On the south side of the equator the interior of Africa is less crowded with large vegetation than the south temperate regions of South America. With a poor soil, dried up and burnt for a large part of the year, the heaths, and those plants called by botanists *Protea*, are exceedingly varied. The Zamia or the Cycads, and the Euphorbia or the Cactus tribe, are present in great strength. The thorned Acacias are also common. Australia, like South Africa, exhibits highly characteristic forms of vegetation. The Gum-trees (Eucalyptus) and leafless Acacias are examples. Even the former are rather gloomy forms of vegetation, while the latter are wintry and forbidding in the extreme. The leaves of the forest trees are generally of a dark olive green, and it is only in the northern part, close to or within the tropics, that the character of the vegetation improves. It must not, however, be supposed that there is no beauty in the Australian forests. The trees are often rich in color and varied in form, but they are always peculiar, and very distinct in all essentials from those of South Africa. Norfolk Island, not far from Australia, is the home of the Ferns. Only one species of Tree-fern is found in Tasmania. New Zealand, exceedingly rich in its Coniferæ, or Pines, is also well supplied with plants not elsewhere known. The vegetation of that country affords a multitude of forest trees, but none that can be regarded as representing either the Oak, the Birch, or the Willow. And yet New Zealand is nearly the antipodes to England. The forests on the banks of the South American rivers away from the tropics are almost as varied and beautiful as those close to the equator, and contain many noble trees not elsewhere found, but affording admirable timber and delicious fruit. The vegetation of North America in the north temperate zone may conveniently be compared with that of Europe in similar latitudes. There is a certain resemblance, but each has a distinctive character. Owing to the presence of lofty mountain chains running from north to south, the plants adapted to the colder regions of the north are found at gradually increasing elevations, till we reach Mexico; but for the same reason there is a marked difference between the floras of the eastern and western divisions of the country. Even on the sides of the Alleghany Mountains this difference has been observed; but the plains west of the Rocky Mountains exhibit in a more marked manner a vegetation of their own, and are distinct from the floras of the central plains on the eastern shores. How different is our California flora from that of the Alleghany Mountains. Magnificent Pines and many other timber trees are met with on our Pacific shores, and these are distinct from the East. Mexico and Central America combine to some extent the vegetation of North and South America, though approaching the latter more nearly. On the higher grounds Oaks, Chestnuts, and Pines abound; and on the plains there are Palms, Logwood, Mahogany, and other equally characteristic trees; the Passion-flower group, the Pine-apple, the Tobacco plant, the In-

digo-tree, the Yucca and Aloe, and the Yam are familiar. Species of the Cactus tribe range widely throughout the whole country. As the Rocky Mountains, so the Andes in South America form a great natural barrier across which there is little or no emigration of plants. Even in the British Islands there are no less than five botanical districts indicating many migrations that have taken place when those islands were connected geographically, and by land, with parts of Europe from which they are now quite separated.

THE ROD.

BY PISCATOR.

Of the several articles which constitute the angler's equipment, the rod is certainly the most important and indispensable. It need scarcely be added that there is a much greater difference in the make and quality of fishing-rods than most people imagine, and it is impossible for the most accomplished angler to cast a line properly with a bad or slovenly made rod. We will presently speak of the most desirable materials, rings, fastenings, and appliances connected with rods for all kinds of fishing, but particularly for fly-fishing for trout and salmon, etc. But before doing this, we will observe generally that no article is of more delicate structure, or more easily injured by rough and improper treatment. The careful angler will, therefore, always take his rod to pieces, and replace it in his bag the moment he ceases operations. By such treatment, it will retain its spring and elasticity unimpaired for a great number of years; in fact, a person so careful may continue to use the same rod for a quarter of a century at least, and it may be so kept as to be perfectly straight, free from warp, and as elastic and efficient as the day it left the store. The only trouble in such a case may be that it may, of course, be sometimes accidentally fractured. Rods made by respectable makers in the large cities of this country, consigned to and sold by reliable firms in San Francisco, such as Liddle & Kaeding, of Washington Street, Wilson, of Clay, and Claybrough, of Montgomery, are in general excellent, both as regards material and workmanship, and are usually free from the most prominent defects, such as not being thoroughly seasoned, having knots and cross-baits (that is, when the fibres of the wood cross each other transversely or obliquely, instead of running parallel for the whole length of the piece), not only warping and cringing, but readily snapping whenever exposed to an extra strain, and so being an unceasing cause of vexation and trouble. The great fault of country-made or home-made, or any other than London or New York, or other large cities' make of rods, is a want of sufficient seasoning of the material, and a weakness in the third piece (next the top) of a four-jointed rod, or, in other words, the taper is faulty, and the rod is too thin and pliant at about two-thirds of its length from the butt, which renders it *whippy* or top-heavy, and it will never cast a line with that smoothness and precision which are so indispensable to fine fishing in clear water.

The single-handed fly-rod (the most delicate in structure, and most difficult to make) should be from ten feet to twelve and a half or thirteen feet long, with a stiff and firm butt of whatever materials, whether straight-grained Ash or any equally good wood; the second joint may be of the same material; Lancewood may do for the third joint, and split Bamboo for the fourth or top

joint; or the whole rod may be formed of split Bamboo, which, at any rate, is full as desirable and much lighter. In fact, split Bamboo rods are now the favorites, and should weigh from seven to ten ounces when mounted, and if from Ash, Lancewood, and split Bamboo together, if strictly for single hand, their weight should range from nine to to fifteen ounces; and if the latter weight, they should be about twelve and a half feet long. Neither rod should be too withy, springy, or elastic, but should have snap or elasticity enough in the top to hook a fish without yielding so much as to permit the victim to disgorge. One of the pleasures of fly-fishing is to use a rod which will responsively hook a trout with but the slightest effort or action of the angler. The sport consists in delivering a fly neatly on a nearly straight line—seeing the trout rise gushingly to the surface and accept the lure—at which critical moment to strike gently with a slight turn of the wrist, and then play the fish gracefully. The charm consists much in the manner of taking the trout at the very instant he makes a sort of swirl or ripple in the water, and the surroundings of a pleasing landscape, with all its beautiful and varied vegetation (and here the horticultural taste, and its excusable congeniality and connection with fishery takes place and comes in) of trees, shrubs, and flowers—the music of birds, the springtime of general rejuvenation, and the running harmony of the gently gliding or swiftly rushing waters. There is much in association with angling, and it does not prevent the soul from basking in all the life and beauty of the sounds, scenery, and botanical studies which continually surround it.

But to return to our subject of rods: The whole rod must be so nicely and truly tapered, and the joints fit the ferrules so intimately, as to enable it to act with as much precision when put together as if it had grown of one piece, no particular part or joint being more pliant than another from the butt to the tip. By this means all whipping action, so often caused by badly made rods, is avoided; its sweep is smooth and even throughout. The next thing which demands attention is the method of fastening the joints together when the rod is in action. There are many methods, but we will only speak of one, which when fishing for very large trout or salmon we consider the best. This is to whip or solder two knobs or wire loops to each joint (and rods are mostly already so prepared by their makers), for the purpose of tying them together with a fine cord or stout pack thread, after they are in their places. A rod made of the materials, and in the manner before described, will constitute a good, serviceable single-handed fly-rod, especially if it is provided (placed in a hollow in the butt) with an extra top, to be used on emergency for worm, or bait, or minnow-fishing in the absence of those rods more proper for the occasion. There can be had, at all good fishing tackle stores, a rod which may be termed a general one—that is, furnished with and placed in the butt two or even three extra top joints—so that it may be used pretty fairly, either for fly-fishing, boat-fishing, fishing from a bank, and indeed, all kinds of angling. The cost of such a rod is usually about from eight to twelve dollars. These rods may have three, four, five, and even six or eight joints to carry in the pocket, so that the fancy and convenience of the purchaser can be suited in any shape. We admire the action of a three-jointed rod more than a four (and it is certain that the fewer the

number of unyielding ferrules there are, the stronger and truer it will be), but the superior portability of the many jointed rod induces us to give it the preference. Rods are now to be had at the tackle-maker's here, of every variety of size and make, suitable for every variety of fish and fishing, from the bamboo cane, general "Jack-of-all-trades," as strong and stiff nearly as a flag-staff, to the limber and elegant little toy we occasionally see in the fair hands of some pretty little minx of nineteen, scarce stouter in the top-piece than a stiff bristle; and from a simple spliced one of two pieces, which, by the by, is undoubtedly the least apt to break, the lightest and the truest in action of any, were it not for its awkwardness to stow away and the trouble of lashing it together, to all the different grades of a multiplicity of joints.

To separate the joints of a rod when they become fixed, wrap a piece of glazed writing-paper tightly round the ferrule, and keep turning it round and round in the flame of a spirit-lamp or candle, until the metal expands and releases the joint. The paper prevents the flame from injuring the rod, and it will not burn if rightly applied. The plan ought always to be adopted when the joints get fixed, and never, on any account, endeavor to screw them apart with great force, as this will so twist and strain the fibres of the wood as to cause them partially to separate from each other, and thus permanently injure the elasticity of the rod.

THE EVE'S APPLE IN THE ISLAND OF CEYLON.

This is one of the most remarkable productions of this beautiful and interesting portion of the East Indies. The tree which bears this singular fruit (*Tubernœmontana dichotania* of the *Hortus Kewensis*) grows to the height of from twenty to thirty feet. It has an irregular, inelegant form, with a scanty growth on the lower parts, but on the top the leaves germinate luxuriantly, forming an extensive and graceful crest. The branches shoot upward, though a few stick out horizontally, and these are generally charged with the greatest quantity of fruit. This is a deadly poison, and, as if to remove the the danger of mischief, Providence has placed it above the reach of both rational and brute animals, as it hangs chiefly from the crest of the tree, and never grows so low as to be reached from the ground. The trunk is about the size of a man's body, and covered with a dark corrugated bark. The leaves are long and narrow, shaped like those of the Bay-tree or Laurel, with a smooth, shining surface, the fibres crossing the filament that divides the leaf longitudinally being strongly marked and regular. The flower of this extraordinary production is said to emit a fine scent; the color of the fruit, which hangs from the branches in a very peculiar and striking manner, is very beautiful, being orange on the outside, and a deep crimson within; the fruit itself presenting the singular appearance of having had a piece bitten out of it. This fruit is shaped something like a large white Magnum-bonum Plum, somewhat flattened at the extremities, but exhibiting a feature as singular as it is unpleasing. From the upper side it appears precisely as if a portion had been bitten off, and from this circumstance the Mohammedans, who imagine the primitive Paradise to have been situated in Ceylon, have called it the "Forbidden Fruit;" conceiving that the mark of the breach of

the Divine interdiction, which entailed so grievous a curse on the posterity of Adam, has been placed by the Almighty upon this singular tree, and that in consequence of Eve's crime, the fruit was rendered poisonous, in order to secure it from general profanation. The blossom is a white flower, something larger than that of the Apple-tree; it opens into five long pointed leaves, slightly pinnated, and presenting a pod which shoots from the extremity of a capsule, something like that of the common Gilly-flower. The fruit is very tempting to the eye, and looks extremely beautiful as the rays of the sun fall upon its smooth and glowing surface. When cut, the pulp, which is solid and without any stone, is of a deep ardent crimson, but exceedingly acrid when the smallest quantity is placed in contact with the tongue. The Mohammedans of Ceylon formerly expressed great veneration for this tree, and connecting it with the print of Adam's foot on the summit of a mountain in the interior, of which they are very tenacious in their belief, they feel satisfied that this island is the locality of the earthly Paradise. This belief is moreover strengthened by the legend of Adam's bridge, and the tombs of Cain and Abel in the island of Ramisseram. Its native name is *Diwi Kaduru*, and nine species of the tree are enumerated. It thrives in a low situation, with a light mixed soil, and is found near Colombo, the capital of the island. This fable about Adam and Eve, and the "Forbidden Fruit" growing on the above described tree, shows to what extent this ancient tradition has spread among a large portion of our race in the early period of the world, and among many of the Asiatic people. Adam is represented by the Moormen, or Mohammedans of Ceylon, on his expulsion from Paradise, to have lamented his offense, standing on the summit of the mountain which now bears his name; the figure of a foot is said still to be traced there, but this the Buddhists claim as a relic of their deity. If this Eve's Apple-tree is a useless and fruitful production of Ceylon, the Cinnamon-tree is one of the most profitable, growing to the height of from twenty to thirty feet.

MULCHING PLANTS IN DRY WEATHER.

During the continuance of dry weather many valuable plants are always lost which might have been preserved alive by a little timely and judicious care. This carelessness is perhaps seldom wiliful; but may sometimes arise from want of knowledge of the most simple and effective methods adapted for their preservation, and often from the scarcity of water when the plants stand most in need of it.

There is one fact in connection with this subject which can not be too deeply impressed upon the minds of all persons engaged in gardening or orchard work; and that is, that if the land has been deeply and faithfully trenched, and kept in good heart by suitable manure and frequent digging, the majority of plants will not only live but thrive during a continuance of dry weather, which would be fatal to others less favorably situated.

The present object is, however, not to consider the question of the proper cultivation of the soil, but to give a few simple methods of mulching, by which trees and flowering plants may be protected in dry weather. Mulching, when properly done, is very effective. The materials used for this purpose may be varied to suit the circumstances of individuals; and, in fact, the range for se-

lection need only be limited by the condition that they shall be of a character calculated to secure a satisfactory result. By mulching we desire to preserve moisture about the roots, partly by the nature of the material, which should have a tendency to attract and retain moisture, and partly by affording shelter against the drying effects of sun and wind. It is also generally made to answer the further purpose of a manure, both solid and liquid, so that the plant is not only nursed against the assaults of the weather, but is also at the same time fed into a state of greater vigor. Bearing these objects clearly in mind each reader will soon discover at his command some material which can be used for mulching. When it can be had in sufficient quantity, we prefer stable litter to all other, placing the small stuff at the bottom, and covering lightly with the long straw. In the absence of this, the soil may be dressed on the surface with recent cattle dung, broken fine; half decayed bark from the tannery, soaked with liquid manure from the cesspit; the sawdust from the wood yard mixed with ashes and charcoal soaked with liquid manure; or any other simple compound which would fertilize and improve the texture of the soil, after it had served its present purposes as already described. The long straw of the stable litter, used to cover up from sun and wind, can be substituted by straw, grass from swamps, fine reeds, small dead leaves, mowings of lawns, or such material not being too coarse, so as to let in the sun or wind, or liable to be disturbed by being blown about, and yet sufficiently open to let in occasional waterings or a shower.

An elegant and appropriate covering for mulching around a favorite plant in the flower-bed or *parterre* is presented in the various kinds of moss.

Having, we trust, sufficiently explained the objects sought by mulching, and the materials most suitable for the purpose, we will now add a few words as to the manner in which it should be applied.

Whatever may be the condition of the soil around the plant to be mulched, whether in a high state of cultivation, or hard and impervious, the surface to be covered must be disturbed with the points of a garden fork to the depth of one or two inches, according to the size and vigor of the plant, so as not to disturb or injure any roots, and left as rough as possible. The area to be treated in this manner will be determined by the size of the plant, and should be a circle extending a little beyond the outside circuit of its foliage. The finest portions of the mulching are now scattered evenly over the rough ground to the thickness of one or two inches, according to the size and description of plant; and it is to be thoroughly watered. No sprinkling will suffice, but the mulching and soil must be saturated. When the water is quite soaked in, scatter over a little more of the fine stuff, and cover lightly but sufficiently with the straw. Much depends upon the manner in which this is done, and if the work is thorough the plant will not require watering again for probably a fortnight, when it should have another good watering all over the mulching, so as to soak it and the soil beneath. The necessity for further watering can at any moment be ascertained by making a hole in the mulching through to the soil underneath.

Much injury is frequently done to the plants by the manner in which they are watered in dry weather. At much labor, and perhaps some sacrifice when water is scarce, a small quantity is poured upon the parched and impervi-

ous soil; it runs about on the surface and wets it probably a quarter of an inch in depth, but never reaches the roots; the sun is left to concentrate his rays upon this little wet spot in the midst of which is the devoted plant dying of drought, and the owner pathetically wonders why it don't thrive after all his care and attention.

Some observant persons, wishing to insure that every drop of water reaches the roots, have adopted the following plan with good effect: They break off the bottoms of a number of ale bottles, and sink them, neck downwards, in the soil near the roots of the plants intended to be watered. A little loose fibre is placed in each to prevent earth falling in, and water can be poured into the bottles as fast as it soaks away.

Regarding the supply of water for this purpose, much valuable assistance can be rendered from the house by proper management; while we hold the opinion that no water should, at any time, be allowed to be wasted from the bedrooms, bath-room, or kitchen, where there is a garden ground which would be fertilized by its application. We feel sure that our readers will at once see what a valuable addition this would make, in times of scarcity, for the purpose of watering the mulched plants. A proper receptacle should be provided, in a suitable position, in which all such water should be put. The proportionate quantity to be added to the pure water, when being used, will depend upon its constituents; a much larger proportion being safe if the bath-room contributed the bulk of it than otherwise.

Mulching being intended only as a temporary protection, it should not be laid on too thickly, or it is liable to cause the emission of masses of small roots into the material, which would be undesirable, as they would be too much exposed to injury in various ways.

UNDEVELOPED FRUITS OF AMERICA.

A few wild fruits may be mentioned which manifestly have great capabilities, that may or may not be developed in the future. The leading instances, in my mind, are the Persimmon and the Papaw; not the true Papaw, of course, which we have in Florida, but the Asia Minor, or Western Papaw so called. Both Persimmons and Papaws are freely offering from spontaneous seedlings, incipient choicer varieties to be selected from both fruits when only a few years old, thereby accelerating the fixation of selected varieties into races; and both give fruits of types wholly distinct from any others we possess of temperate climates. He that has not tasted Kaki has no conception of the capabilities of the Diospyrus genius. The Custard Apples of the West Indies give some idea of what might be made of our Papaw when ameliorated by cultivation and close selections for many generations. I have understood that one of the veteran pomologists of the country, Dr. Kirtland, of Ohio, a good while ago initiated a course of experiments upon the Papaw in this regard; it would be well to know with what success, and if the breeding and selection have been continued.

Our American Plums have for many years been in some sort of cultivation and have improved greatly upon the wild forms; but I suppose they have not been systematically attended to. Their exterior liability to black knot and other attacks renders them, for the present, unsuccessful.

Finally, if pomology includes nuts, there is a promising field uncultivated.

Our wild Chestnuts are sweeter than those of the Old World; it would be well to try whether races might not be developed with the nuts as large as Marrons or Spanish Chestnuts, and without diminution of flavor. If we were not so easily satisfied with a mere choice between spontaneous Hickory nuts, we might have much better and thinner-shelled ones. Varying as they do, excessively in the thickness of the shell and the size and flavor of the kernel, they are inviting your attention, and promising to reward your care. The Peccan is waiting to have the bitter matter between the kernel bred out; the Butternuts and Black Walnuts to have their excess of oil turned into a a farinaceous and sugary matter, and their shells thinned and smothered by continued good breeding, when they will much surpass the European Walnut.—*Prof. Asa Gray.*

THE SPANISH CHESTNUT.

In all the mountain regions of Spain, France, Italy, and Switzerland, their declivities, half way up from the plains below to the snowy peaks above, are clothed with magnificent forests of a species of Chestnut, the edible fruit of which, imported into this country, is known as the Spanish Chestnut. "Gardner's Farmer's Dictionary" contains the following brief description of this "famous European tree:" "The European, also called the Spanish or Italian Chestnut, is of immense size and longevity, trees being known which have a girth of sixty feet. The wood, except in very old trees is admirable, being more durable than Oak in moist situations. The bark is also used for tanning. It prefers a dry, silicious soil, abounding in silicious matters and potash. The European variety is easily raised from the seed, grows rapidly, and bears in seven years. The fruit is five times larger than ours, and commands a good price in the market. Chestnuts are used boiled, roasted, and raw. In Southern France, Italy, etc., they constitute the bread of a large population." From other sources we learn more of its uses and values as a means of subsistence than is furnished in this meagre account. During the protracted wars which were formerly waged between the mountain tribes and the cities on the plains, the Chestnut formed almost the only article of food which the former could command, and without it they would have been starved into submission in a tenth part of the time required to subdue them by force of arms. Indeed, the Chestnut enabled the people in the uplands to maintain long periods of *quasi* independence, and to dictate their own terms when yielding. Not only is this nut eaten boiled and roasted, but it is pulverized and mixed with flour for bread, and may be employed in soups, puddings, etc. The nut is exceedingly nutritious and wholesome, and at the present day forms as essential an article for consumption, to very extensive populations, as it ever did in early times, when the means of living were comprised within a smaller compass. Barry thus speaks of the Spanish Chestnut, or *Marron:* "This is the large, sweet nut, as large as a Horse-chestnut, imported from abroad. There are many varieties cultivated in France and England, but that cultivated by the French as *Marron de Lyon* is the best. It is propagated by grafting on the common sorts. It is not reproduced truly from seed, but its seedlings produce large and fine fruits. It bears the second year from the graft and the fourth from the seed."

THE BOSTON ELM.

Not only the citizens of Boston but those of all parts of the country will regret to learn that the "Old Elm Tree" on the Common succumbed to the high wind of February 15, and now lies ruined, having been broken off about one foot from the ground. This grand old tree had more than a local interest, and under its shades have transpired scenes within the past century which gave it an historic fame. It will be remembered that on the 29th of June, 1860, during a very severe storm, the tree was seriously injured, and it is not often that an occnrrence of such small importance as the destruction of a tree will cause so much sorrow and regret as did the dismemberment of the "Old Elm," and hundreds of citizens visited the spot the next day, and secured portions of the fallen limbs to preserve among the choicest of the relics of the olden time. It would be difficult to assign to the tree even an approximate age; but it has been known, however, as far back as tradition can go, and it is reasonable to believe that it was growing before the arrival of the first colonists. A tradition has existed in the Hancock family, passed down by Mrs. Lydia Hancock, wife of Thomas, that her grandfather, Hezekiah Henchman, set out the tree when he was a boy, which would have been about two hundred years ago; while according to other traditions witches were hung from it in 1656 and 1659.

Although the tree had attained a great age and uncommon size, its peculiar beauty consisted of its fine proportions and graceful limbs. In the month of April, 1825, the first known measurement of the tree was made, and the dimensions were as follows: Height, sixty-five feet; circumference, twenty-one feet eight inches at two feet six inches from the ground, and the branches extended in diameter eighty-six feet. The storm of 1860, which so mutilated the tree, was not the only one which injured its great branches. In the summer of 1832 it was much injured by the violence of a storm, and its great limbs were so much cleft asunder as to allow them to rest their branches upon the ground; but they were subsequently, at much cost and labor, restored to their former positions, and were sustained in place by iron bolts and braces. By the gale of September, 1869, a large limb measuring forty-two inches in circumference was also torn from the tree.

It was upon this ancient tree that some of the first executions in the colony are supposed to have taken place, and during the Revolutionary struggles it was a place of constant resort of the Sons of Liberty, who frequently caused it to be illuminated with lanterns on evenings of rejoicing and festal occasions. It also served the purpose of exhibitions of popular feeling and indignation, and from this it probably acquired the name of "Liberty Tree." Very near it, on the 3d of July, 1728, occurred the duel between Benjamin Woodbridge and Henry Phillips; and beneath its branches have been enacted many scenes which inspired patriotism and shaped the course of subsequent events.—*Boston Journal.*

FLOWERS IN LIBERIA.

Most of the African flowers differ from those of temperate climates in three striking characteristics, viz., brilliancy of color, luxuriance of growth, and in emitting their odor after sunset.

The last peculiarity has been admirably described by Moore, in speaking of

that lovely native of India—the fragrant Jasmine:

"The flowers that wake while others sleep,
The timid Jasmine buds, that keep
Their fragrance to themselves all day,
But when the sunlight drives away
Let their delicious secret out."

A rare and beautiful species of the Jasmine grows in our African forests. The bushes sometimes grow to the height of ten feet, and are densely covered with large pinnate, oval leaves. The starry white flowers, with bright pink stems (clustered on what botanists term a cyme), raise their delicate heads in striking contrast with the heavy masses of glossy, dark green leaves. Their fragrance is delightful. If we happen to awaken at night in a room where a sprig of this odorous flower has dropped, we are almost inclined to imagine that, instead of the dreadful malaria we strive so much to keep out,

"The sweet south wind
That breathes upon a bank of Violets,
Stealing and giving odor,"

has, by some miraculous means, penetrated our closely-shut African chambers. Most aptly did the ancients call this sweet flower the "Odorous Violet."

So much has been written about the majestic Lilies of the tropics that it is only necessary to say that many finer varieties flourish on our coast. Perhaps the most remarkable of these is the white Chandelier Lily, so called from having six narrow petals, four inches long, pendant from beneath, and six stamens, an inch shorter, growing out of the margin of a delicate, funnel-shaped corolla.

The Acacia Mimosa, said to be a native of the Nile, is a beautiful but fragile-looking tree, from fifteen to twenty feet high, with small yellow flowers peeping out from among its branches of fine sensitive leaves, and giving forth a most delicious fragrance.

In passing through the forests we are continually struck by the number and variety of luxuriant vines, so closely interwoven with the branches of tall trees as to form a complete canopy. Most of them are covered with small white flowers, apparently almost too delicate to touch.

Many of the flower-bearing shrubs of temperate climes when transplanted here attain to the height of trees. Some years since a member of our mission brought across the Atlantic a small cutting of the Oleander, from which has sprung a number of stately trees. Some in the garden at Cavalla have already grown full twenty feet high, and are almost constantly covered with double pink flowers, which, for richness and beauty, surpass anything we have ever seen. A lovely sight it is to see these magnificent trees surrounded by birds of brilliant plumage.

Enough has been said to convince our readers that flowers, so appropriately styled "the smiles of God," have not been withheld from this land of moral darkness. We earnestly pray that the day may come when these beautiful gifts of our Heavenly Father may be appreciated by a redeemed and enlightened people, and that Africa, *spiritually*, as well as naturally, "may rejoice and blossom like the Rose."—*West African Record.*

To Make a Nest Egg.—A nest egg which can not be broken by frost or accident, and which can not be mistaken for a fresh egg, may be made by breaking a small hole in a hen's egg, blowing out the contents, and filling with plaster of Paris.

SPORTSMAN'S CLUB OF CALIFORNIA.

A club under the above name has been recently organized in this city, having for its object the protection of game and fish throughout the State. Its organizers include some of the best names among the gentlemen of our city who take an interest in the preservation of game and fish, and who will devote their energies to the suppression of pot-hunting and the wanton destruction of birds and fish out of season. This society will keep a close watch on the infringers of the recently enacted laws, and prosecute vigorously those who set all laws at defiance, as heretofore. There will be no want of funds, either, to carry out the objects of the club, as already a large number of gentlemen taking an interest in these matters have signified their intention of joining—some two hundred or more. The initiation fee is $20, and $1 per month dues, which will put the society in funds to do all they promise. The club will have special fishing privileges in connection with the enterprise, to which members will be entitled.

Such organizations in the East are doing wonders to enforce the game laws, which are very stringent, and are through this means no longer dead letters, as infringers and poachers can testify to their very great sorrow. The Sportsman Clubs are working in harmony with the Fish Commissioners, and will aid them in their duties, seconding heartily their efforts to have proper and effective laws passed that are not for the benefit of clubs, but for the general benefit of the whole public, our legislators having, to their credit, wisely given their attention to the enactment of such laws as will be of great benefit to the State at large, and check the wholesale destruction of fish and game before it is too late to remedy the growing evil, and before the luxury has become so scarce as to be only within the means of the rich. The present game law, if properly enforced, will enable the poor man to enjoy its benefits equally, and not put game and fish beyond his means by its scarcity andconsequent high cost.

Heretofore it has been difficult to convict under the old law, which required the offender to be caught in the very act; but the present law makes it equally culpable for any parties to have game or fish in their possession, out of season, which will put a stop to restaurants serving up quail under the fictitious name of "owls." Trout have been openly sold in the markets for the past month, although the present law forbids catching or selling them before April. The members of the Sportsman's Club have pledged themselves to report for prosecution every case of the kind coming under their observation hereafter, and what has heretofore been everybody's business will now be theirs. Trapping and netting trout in streams, the use of giant powder cartridges, and all similar wanton destruction of fish, will soon be a thing of the past, worthy only of the Darker Ages, and the gourmand will find it not so easy to indulge his epicurean taste for "owls on toast" out of season.

The Sportsman's Club is just what is needed, and with such objects in view that benefit the entire community, it should have the hearty support of every man who would see California continue to be, as now, celebrated for its splendid fish and game, as our markets give evidence.—*Post.*

An inch depth of rain on an acre of ground yields 6,272,640 cubic inches of water, making 22,625 gallons, or about ten times that number of pounds.

THE CAMELLIA.

Mr. James Pentland, in his extemporary address at the last meeting of the Horticultural Society, said the ladies ought to know that there is no necessity for banishing this beautiful plant from their collections for the house and window gardens. All that is necessary is to keep them elsewhere than in a heated, dry atmosphere, like that of most living-rooms. If placed in a window, in a room not kept many degrees above frost, washing the foliage occasionally to free it from dust, and these magnificent plants, with due attention as regards water and air, will give more satisfaction than almost any others that can be grown in the house.

Mr. John Feast, in his essay, said that keeping these plants in too much heat was very detrimental to their growth, and is the reason of their general failure as house plants. They will stand, he said, much hardship, and the less fire heat they receive the better, if proper attention be paid to watering. If your plant has been properly potted, by using good drainage, it is not apt to be injured by watering.

In plants that are sickly the foliage assumes a pale color, and is soft to the touch. The first thing to resuscitate them is to re-pot in good soil, with plenty of drainage. Sometimes the roots are thoroughly washed free from the earth with fresh water.

Different cultivators have different views with regard to soils, but Mr. Feast favors a fresh, loamy, soft, silicious soil, taken from an old pasturage-ground, about an inch and a half deep, and laid away one season to decompose, and when the plants are to be potted, add one-third of its bulk of the following: Leaf-mold, cow manure, a small quantity of charcoal, and a little old mortar, all mixed together. For drainage, rough charcoal is probably the best material, and may be used by placing a little mess over it before putting in the plant.

DRIED CURRANTS.

What can be accomplished in California in the matter of producing Dried Currants, commonly known as "Zante Currants," or "Raisins of Corinth," may in some measure be understood by examining samples of that fruit left by Mr. W. B. West for exhibition at the grocery store of H. S. Sargent, on Hunter Street. The quality of the fruit appears superior to the best imported, and in point of cleanness, the boxes far surpass the general average of the foreign article. Mr. West exhibits the sample mentioned with a view of drawing general attention to what promises to become a very important industry in this State. The Dried Currant of commerce is really a small grape, indigenous to the Ionian Islands, from which immense quantities annually find their way to the markets of the world. About three millions of pounds are annually imported into the United States, and our supply, as well as that of England and other European countries, is chiefly drawn from the Ionian Islands, Greece, and Turkey. From the success that has attended experiments in producing this fruit in California, it seems only reasonable to believe that in time, and only a very short time, a heavy current of trade in dried fruits must inevitably turn toward American possessions on the Pacific. Spain, Portugal, and France do not surpass, if they equal, California in the production of the grape, and the samples of our "Zante Currants" produced at home, when compared with the foreign article, must at once convince any reasonable person that the Greeks and the Turks will soon be com-

pelled to play second fiddle to California in the business. We would invite consumers to call at Mr. Sargent's store and examine the samples there exhibited. When farmers perceive what can easily be accomplished in that direction, many of them may be induced to devote a portion of their lands to the culture of the white Corinth Grape, the fruit of which is known as the "Zante Currant," and it may be a satisfaction for them to know that Mr. West is propagating plants to supply the demand.—*Stockton Independent.*

ALMOND CULTURE.

There are hundreds of acres of hill land in this country well suited to the growth of Almonds. We give below some hints on Almond culture, from one who has had a long experience in fruit growing. Two important facts are here brought out: first, the Almond succeeds best on hill land; second, that it does not require, as some other fruits, a very rich soil. A light, deep soil, such as is common on the foothills of Sonoma, is best. Our informant says:

"I planted Almond trees about fifteen years ago. I first budded on Peach roots; they bore the third year, and have never missed a crop, except last year. That year they were killed by a heavy frost which occurred on the 5th of April. In my opinion, Almonds ought to be planted on upland—a very rich soil is not required. If planted on the bottom I would select light, gravelly land. The Almond is the earliest tree to bloom—coming out often in January. If on low land, they are much liable to damage from frost. My Almond orchard is on a hill-side from 30 to 60 feet above the plain, with an eastern exposure. It would be better to have a west or north-west slope to the land, as the trees do not bloom as soon, and are less liable to injury from frost than when the exposure is to the east. My daughter's orchard, near mine, facing to the west, is not higher above the plain than mine, and last year she had a good crop of Peaches and Almonds, while mine were all killed. The orchards are not half a mile apart. My Peach-trees, with a like exposure, were not injured. I conclude, then, that Almonds ought to be planted a little above the plain, on land with a gentle slope to the west or north, and never on low land near water courses. This rule applies with equal force, as far as location goes, to Grapes, Peaches, Apricots, Plums, and other fruits. Apples, Pears, Plums, and Cherries require a strong soil. Almonds and Peaches, in my experience, do better on a light soil. I plant the Almonds in the fall in a box; in the spring I put them in a nursery and leave them till the following spring, when I set them out; and that year I bud or graft them from the best varieties. I think what is called the paper shell is the most salable. In three years the trees begin to bear—they continue to increase each year; from one tree I took eighty pounds of dried Almonds ready for market. The trees were twelve years old, budded on Peach roots. I sold the Almonds for 20 cents a pound, netting $8 a tree—this was over the average. I think it safe to say that full grown trees will pay $5 a piece per annum. The great advantage of growing Almonds is that you can keep them over; they do not perish like other fruit, and if the home market is overstocked they can be shipped abroad. Most of the fruit is planted too close in this country, which is one cause of small fruit. Fruit-trees should be set at

least thirty feet apart each way to do well. Wherever you see a crowded orchard, you will find small fruit, I think it safe to say that an Almond orchard, in a good location, would pay an annual profit per acre of $500. I have all kinds of fruit, and my Almonds pay the best of any. After gathering, I hull them and put them in the sun and thoroughly dry them, and then they will keep good two or three years. I have never seen yet a worm in an Almond. They are easy to handle and not expensive to ship."—*Sonoma Democrat.*

AMARYLLIS HENDERSONI COCCINEA.

This Amaryllis is one of many raised by Mr. G. Henderson, of London, from seed, and is an instance made in the improvement of this fine genus by seedling cultivation and crossing. It is of a scarlet color, each petal tipped with white and dotted with crimson. Its funnel-shaped flowers have a greenish star in the center and are from 6 to 9 inches in diameter.

Many of the Amaryllis are beyond question among the most showy of greenhouse flowers, and would be more esteemed even than the Lily, were they as hardy. Exceptions, however, may be found in *A. Johnsoni*, *A. belladonna* and its many varieties, *A. Valotta purpurea*, *A. Vittata*, *A. longiflora*, and *A. formossissima*, which are adapted either to the sitting-room or out-door cultivation. Those of our readers who have never seen *A. formossissima* (the Jacobean Lily) would be pleased if they procured it. The form of the flower is strikingly graceful—its glossy, soft dark-crimson color is superb. Blooming bulbs may be purchased of any seedsman for twenty-five cents each. They should be planted in the garden about June 1st, in light soil, with the neck above ground. The scape appears before the narrow strap-shaped leaves are much developed, and large bulbs will bear two, sometimes three, flowers in succession. The greenhouse varieties of the Amaryllis after blooming may be removed from the pots and preserved the same as a Tuberose bulb—though it is preferred to leave them in pots placed out of the way in a temperature between 40 and 50 degs., and to give them the needed repose by withholding water. In this way we may choose our own period for bringing them into bloom.

When seeds are desired, it is well to assure the fertilization of the pistil by artificial application of pollen, and to keep them in heat and moisture until the flowers are withered and the seeds matured. They may be sown at once and blooming bulbs produced in from two to four years, according to circumstances.—*Rural New Yorker.*

PRUNING VINES.

A Grape-grower in Napa County attributes the premature decay of Grape-vines more to severe pruning and the use of sulphur than to the phylloxera. In the *Register* he recommends planting the vines sixteen feet apart, and training them up to a height of several feet, so that a man or a horse might walk beneath them. The first recommendation, to plant the vines further apart, we think would be beneficial. The second recommendation, to train the vines higher from the ground, would not answer so well, judging from our own observation. It is known to all Grape-growers in this part of the State that the largest bunches, and the best and sweetest berries on the bunch, are next to the ground. We remember re-

moving a large bunch of Flame Tokays which rested on the ground; the lower side of the bunch was partly covered by the soil and was not colored by the sun, but the berries were ripe, sweet, and juicy. On the same vine the bunches above the ground were small and the berries inferior. It is the experience here that all varieties, except the Isabella, Catawba, and kindred species, grow better the nearer they are to the ground. To plant further apart would probably improve the quality of the Grapes, make the vines less liable to disease, and not diminish the yield of wine to the acre.—*Sonoma Democrat.*

CHEAP AND EASY MADE FOLIAGE BED.

The fashionable foliage bed, owing to the high price of Coleus, Centaureas, etc., is an expensive luxury. To produce the best effect these plants must be bought by dozen or fifties, and planted as closely together as possible. Let me, however, suggest a foliage bed within the reach of the shallowest purse. Every old garden has a bunch of Ribbon Grass—there is sure to be plenty of it in some of your neighbors' gardens, if not in your own. Beg, borrow, or steal enough of it (and, generally, you would be thanked for taking every blade), and put a broad edging of it around a small circular bed. Buy one paper of the seed of striped Japanese Maize (cost five cents), and plant all in the centre of your bed, and you will soon have something very ornamental and with very little cost or trouble. Your Ribbon Grass will prove a permanent investment, needing only to be kept within bounds by trimming. The centre you can vary from year to year. There are two kinds of Japanese Maize—the tall and the short—either of which is adapted to the object. The red-leaved Cannas—the seed of some of which make quite sizable plants in one season, and grow larger and finer every year—are also suitable for the same purpose. The Castor Oil Plant (*Ricinus Communis*), too, will grow quite vigorously from seed, even when not started in a hot-bed; but they are so large that, if they are grown, the size of the bed should be larger than for the other plants. The Golden Feathered Pyrethrum makes a very pretty edging, but would take longer to bring to perfection from the seed. It is a hardy perennial, however, and needs but slight protection in winter.—*An Observer.*

Blackberries.—If the reader is now making his first experiment in the culture of Blackberries let me give him a word of advice, to-wit, that he try mulching instead of hoeing the plants. If, however, he has a large lot of them, set in rows so that a horse cultivator can be used between them, it may be best to cultivate and hoe. But, for small patches, I think mulching is better for keeping down the weeds, and keeping the soil cool and loose around the plants. I used to try hoeing, but the rows were very near together, so I could not use the cultivator, and I found in a short time that I had got hold of a bad job. Wherever I cut a root with my hoe there a shoot would spring up, and very soon I had three plants where there was room but for one. Becoming disgusted with this method of culture, I took up my plants and decided to mulch instead of hoeing. Old hay or straw costs but little, will keep down weeds, and promote the growth of the plants. Let those who have been in the habit of hoeing give the mulching a trial.—*Cor. Boston Cultivator.*

Editorial Portfolio.

OUR FRONTISPIECE.

This comprises two California views —one a mountain scene, and the other a view of Mount Tamalpais. We need hardly mention how greatly and justly California is famed for much strikingly magnificent scenery. The mountainous character of the State not only prevents monotony, and secures a rich variety of landscape, but gives them extent as well as grandeur. This majestic mountainous character prevails in many portions of the slope, but the Yosemite Valley especially is a gorge of matchless cliffs and cascades, and with more wonderful natural pictures of sublimity and beauty than can be found within an equal space in any other part of the world. This celebrated valley is a chasm in the Sierra Nevada, 400 feet above the level of the sea, and distant about 120 miles in a direct line from this city. It is shut in closely by walls of rock almost perpendicular, from 2,000 to 4,500 feet high. The river Merced flows through it, forming a natural meadow ornamented by beautiful trees, brilliant verdure, and lovely, gorgeous, and varied flowers of every color and shade.

Mount Tamalpais, or Table Mountain, is a noble and lofty elevation to be seen from nearly every part of our extensive bay (a bay, by the way, equaled by none in the world in spaciousness and beauty but by that of Rio de Janeiro), and clothed with an abundance of fine vegetation, such as the White Oak (*Quercus hindsii*), the Evergreen Oak (*Quercus agrifolia*), the Californian Chestnut Oak (*Quercus densifolia*), the Fulvous Oak (*Quercus fulvescens*), the Buckeye or Californian Horse Chestnut (*Æsculus Californica*), the Californian Laurel (*Oreodaphne Californica*), the Californian Nutmeg (*Torreya Californica*), the Madrono (*Arbutus menziesii*), Manzanita (*Archtostaphylos glauca*), the Ceanothus, sometimes called the California Lilac, with many other handsome and interesting trees, shrubs, and abundance of ferns and flowers. In our mountain picture may be seen a traveler on horseback following two pack-mules, which are on a winding trail in rather a desolate part of some mountain range. In the view of Mount Tamalpais there are delineated two figures, one of them an artist, employed making a sketch of the picturesque mountain, part of the bay, and the surrounding scenery; the other a sportsman with his gun and accoutrements resting after his exertions in pursuit of his game. Both together form a very natural subject to assist in filling up a pleasant landscape.

THE EXOTIC GARDENS AND CONSERVATORIES.

Some time since we briefly referred to this grand establishment, and as everything now is near completion, we consider it just and appropriate to give our readers some idea of the extent of the institution.

Although the business of selling plants, etc., has been carried on since December last, the building of additional greenhouses and the large conservatory has been going on ever since without interruption, and it is supposed that by the 15th of May everything will be completed.

The Exotic Gardens are situated on Mission Street, between Thirteenth and Fourteenth Streets, directly opposite the ever popular "Woodward's Gardens." The locality is the best that could possibly be chosen for the purpose; easy of access by most of the

street cars, in the midst of many fine residences, and where the atmosphere is clear when other portions of the city are enveloped in dense fogs. To grow plants well, a clear sky and plenty of sunlight are very material, and it is peculiar that the locality chosen is comparatively free from the disagreeable fogs swept in from the ocean almost constantly.

The Exotic Gardens are carried on under the firm name of Miller, Sievers & Co., our old friend Mr. F. A. Miller having the sole management. The total capital invested is forty thousand dollars, of which only a very small proportion was expended for dwellings erected on the premises.

The commercial houses, where plants are raised, cultivated, and sold, are ten in number, each 100 feet long, and all are connected, with one potting and packing shed, 120 feet long. Of these ten houses Nos. 1 and 2 are devoted to propagation and young plants; these two houses are heated in winter by an old-fashioned flue.

Nos. 3 and 4 are heated by hot water pipes, and are devoted to Orchids, Marantas, Caladiums, Anthuriums, and other rare hothouse plants of recent introduction.

No. 5 is devoted to plants which require shade and a cool temperature; also for plants to be acclimatized.

No. 6 is the Fernhouse, and we have never met with a finer and rarer collection. Over 200 varieties are now cultivated, from the smallest size to fine specimen plants.

No. 7 is entirely occupied by Camellias, Azaleas, and Rhododendrons. Here we see the Azalea pontica now in full bloom. This Azalea was lately imported in many varieties from France, and Mr. Miller thinks that they will make excellent flowering shrubs for the garden in this climate. This is the first introduction of this class of plants. The flowers are very fragrant, and of various shades of colors. We also notice in the house a very vigorous lot of young Camellias raised here. The raising of Camellias here is another novel feature, and apparently a perfect success. The fact that they can be grown at home will insure lower prices than we have been accustomed to pay for this choice and popular plant. Already fine young plants can be had at this establishment for fifty cents, a price within reach of all.

No. 8 is devoted to Orange-trees, Oleanders, climbing plants, and Geraniums. Probably the largest collection in the United States, of the different varieties of Oranges and Lemons is to be seen there. Eight varieties of Oleanders are grown; and the collection of Geraniums includes many new and valuable varieties.

No. 9 accommodates the ever popular Fuchsias; also a very choice lot of Amaryllis, and other rare bulbous plants.

No. 10 is the house for succulents—a most interesting class of plants—consisting of 60 varieties of Cactus, 25 varieties of Agaves, 20 varieties of Aloes, and 15 varieties of Echeverias, besides a large selection of plants of similar character.

Another set of houses, Nos. 11, 12, and 13, each 100 feet long, but on a much larger scale than the first set, is at present devoted to young Palms, of which over 75 varieties are cultivated. The collection contains about 4,000 plants, from 1½ to 10 feet in height. Palms are becoming popular, and many varieties will prove hardy for the garden. Heretofore only one kind could readily be obtained, and that is *Corypha Australis* (Cabbage Palm). Of decora-

tive plants none can compare with the graceful and effective form of a Palm, and we hope to see the day when they will be found more numerously about our fine residences.

A third set of houses, Nos. 14, 15 and 16, each 120 feet long, are arranged for cut flowers only. For that purpose Roses, Pinks, Tuberoses, Cape Jasmines, Heliotrope, Camellias, Bouvardias, Begonias, Orange blossoms, Wax flowers, Maiden Hair, and Smilax will be cultivated largely.

The main conservatory, 120 feet by 130, consists of three large arch-roof houses, the centre one being 30 feet high, and the other wings 24 feet. The outlines are graceful and the structure solid. This conservatory has just been completed, and forms a fine spectacle; it is by far the largest glass structure in the United States. The main building will contain large specimens of Palms, and Tree-ferns, and groups of specimen plants artistically arranged. The east wing will contain a Victoria Regia basin for water plants, 40 by 40 feet, in the form of a rockery. The west wing will be the show house, where collections of plants are so arranged as to show to the best advantage; also a rockery with succulents.

We wish the Exotic Gardens the success they deserve, and we have no doubt that the California public can well appreciate this gigantic undertaking.

NEW PLANTS.

Zinnia Darwinii.—The new varieties of the very useful annual, Zinnia, will be gladly welcomed by all flower lovers. The *Z. Darwinii* is very double, and, instead of being flat like the familiar *Z. elegans*, its flower is almost globular. The colors are scarlet, orange-scarlet, orange-yellow, rosy-purple, sulphur, and white. The *Z. D. nana compacta* is a dwarf variety, and *Z. D. vittata* is carnation striped; including such combinations as white with purple flakes; purple with white flakes; yellow with crimson; sulphur with purple, etc.

A New Lily.—If pictures and reports be truly made the *Lilium Packmanni* will prove something astonishing in size and coloring. It is a hybrid between the Auratum and Lancifolium or Speciosum. The flowers are said to be eight inches across, spreading and reflexed like the Lancifolium. The color is mostly white, except the base of the petals, which is slightly suffused with rosy crimson, the tinted surface being marked with deep crimson spots. It is said to be as hardy and as easily grown as its parents.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

During a late visit to the most deservedly highly praised and beautiful Napa Valley, which this year, particularly, in common more or less with the whole of California, is glowing and exultant in fruit and flower blooming riches and loveliness, and is especially remarkable for its luxuriant verdure, abundant grains and grasses, and fine trees and shrubs, we had an opportunity of visiting a small fruit farm belonging to Mr. Sandycock, about six miles from the city of Napa, on which chiefly are cultivated with very great success the Lawton Blackberry and several varieties of the English Gooseberry. The Blackberries are raised on a very rich and black alluvial soil, not uncommon in many parts of this generally very fertile valley, and receive a plentiful irrigation in the dry season. The English Gooseberries are grown on some-

what poorer ground, but made deep partly by subsoil plowing and partly by thorough spade-trenching, and plentifully manured every two or three years with animal dung. Either owing to the nature of this soil where these Gooseberries have been planted, or the artificial modes of management, they have been preserved by the proprietor from that terrible pest—the mildew—which has rendered the success of the English kinds of Gooseberry in the whole of the United States, with but very few exceptions occasionally, altogether hopeless. The variety which the owner finds to do the best, and produce the finest fruit—the berries being from three to five inches in circumference—is the Whitesmith. Mr. Sandycock finds a good sale for them when ripe, in the San Francisco market, consigned to Lusk & Co. and others. He states that the manner of the first attack of the mildew is at the lowest roots, but, owing to the vigor of the plants, and their judicious pruning, which is in the bush and not in the tree or single stem form, he completely resists its always much dreaded attack. This Gooseberry patch is also irrigated in the dry season, but more moderately than the Blackberries, which latter fruit is, like the Gooseberries, very large, and vastly prolific in quantity to the acre. The proprietor also raises abundance of the Cherry Currant, which he likewise finds to succeed best in the bush form. He at first having been a miner in England, and not therefore accustomed to the science of horticulture, attempted to cultivate his Gooseberries and Currants in a single stem shape, as is very common in his native country, but he soon discovered that this would not answer here, and he therefore had to abandon it. But his present success with the English Gooseberry is a good example for other fruitists, and it would be well for those who wish to shine in this way with the foreign sorts, to pay him a visit, and see all his plans for themselves. The English Cherry-trees on this place looked also very healthy, and we observed their stems protected with boards set on end to keep them from being scalded by the hot rays of the sun, which they do most effectually. The proprietor carefully ties up his Blackberries to stakes, and also his Gooseberries, to prevent the fruit being soiled by the earth, and which makes it also to be more easily gathered. All the above named fruits are very abundant this year on this place, and looked very promising as to quality.

While on our favorite subject of fruit cultivation, we will again urge fruit planting, and the consequent saving of doctors' bills, and here we will quote the excellent advice of one of our exchanges:

"There are too few orchards in the country. Many farms have not an orchard upon them, and in many of the orchards that are planted, there are only Apple-trees. Not a Peach, or Plum, or Cherry, or Pear, or Quince-tree can be found on the premises, when there should be dozens of each kind of fruit. Is there any greater luxury than ripe fruit? Do not young and old desire it? Is there any better food than ripe fruit? Is it not healthful? Ask your physician. He will tell you it is healthful—that by its proper use you may frequently prevent a spell of sickness—that the acid of ripe fruit will act upon the liver, separate the blood from the bile, and thus prevent the bilious attacks to which we are so subject in this climate. Fruit is a cheap as well as a healthful article of diet. Every farmer should have all

kinds of fruit growing on his farm that are hardy in this climate. He should have Cherries and Peaches, Plums and Pears, Quinces and Apples, growing in abundance. No other investment will insure more happiness or profit. But the farmer should not stop with these fruits. He should have Strawberries, Raspberries, Gooseberries, and Currants, and Blackberries and Grapevines, that his family may have all kinds of fruits in their season, and every day in the year—for winter Apples and Pears can be kept till Strawberries ripen in spring. Where there is a will there is a way; and we hope farmers will have the will to plant all these fruits as soon as possible.

"As the production of fruit is a matter of pride with our people, and is destined to be a source of large revenue to them, so they have sufficient motives for giving their attention to this matter, and for learning all that is to be learned about it. The State abounds with men of sufficient intelligence to take meteorological observations, and a sufficient public spirit to perform the labor, and purchase at their own cost all the books and instruments needed. But something more is wanted, and that is a meteorologist who will explain precisely how and where observations can be taken, with the most instruction, to determine the laws that govern the night temperatures of our valleys and and hills in April and May, in September and October, and whether warm currents or strata of air at different elevations prevent or diminish on the hillsides the influences of the radiation that causes the frosts in the low lands. The drier the atmosphere and the clearer the sky, the greater is the radiation, which will sometimes reduce the temperature of the earth in a few hours from 80° to the freezing point. A fall of 13° Fahrenheit has been observed in four minutes at sunset; and in Hindostan ice is obtained by setting water in shallow plates of porous pottery in loose straw, laid in shallow excavations in the midst of wide valleys. The evaporation and radiation bring down the temperature to 28°, though the atmosphere three feet above is 20° higher. A series of observations, according to some uniform plan, and guided by the highest meteorological learning of our time, to determine the conditions of nocturnal radiation and frost throughout our State, might be of great service to local industry, as well as of interest to scientific men.

"As frost is caused mainly, and in our fruit districts may be attributed exclusively, to radiation, so one of the best checks of it is tree planting."

Now, as to our fruit and vegetable markets: A little before the 20th of last month (April) Strawberries had become more plentiful and cheaper, but on the 21st prices became higher, and the receipts were rather light. On the 26th to the last of April the weather became quite warm, the thermometer showing in the middle of the day 72°. In consequence of this warmth the supply became abundant and regular. Apples were scarce, at $3 to $5 per box, delivered. California Oranges were a little more abundant than they had been for a month previous, and slightly cheaper with the advent of Strawberries. Vegetables were, the last of April, generally cheaper. Asparagus and Rhubarb were especially abundant. New Potatoes retailed at 6 to 8 cts. per pound; old Potatoes were more plentiful, and the best California and Salt Lake sold by the single sack at $2 50 to $2 75 per 100 lbs. Winter Apples were scarce, the demand active for all in good condition. The Ajax

from Oregon brought 384 boxes of Winter Apples, probably the last of the season. The receipts of Strawberries averaged upward of 200 chests per day, selling mostly at $11 to $12 per chest of 80 lbs. Sicily Lemons and Oranges were in good supply. Limes were plentiful and cheap. Tahiti Oranges were reported to be very light crop; the season was backward, and vessels at the Society Islands remained there a long time to complete cargoes, rather than accept green inferior fruit. Consignments of Los Angeles Oranges continued to arrive, but the Orange crop from that section is supposed to have been all in for the season. California Oranges of superior quality, raised by Dr. J. Strentzel, near Martinez, Contra Costa County, were in market.

About the middle of April a shipment of one hundred and fifty boxes of Messina, Sicily, Oranges arrived in this city overland. It was the first shipment of the kind which had ever reached here. The fruit was in good condition. It bore a very close resemblance to the Los Angeles Orange—so close that it would be difficult for an expert to detect any difference. The skin was stained with a deposit of the Orange coccus, showing that the groves of Sicily are afflicted in the same manner as those of Los Angeles. These Oranges had been between three and five months on their way here. Los Angeles culturists need not be alarmed, however, at the appearance of European semi-tropical fruit in California. As long as these foreign Oranges can not be imported and sold without loss at less than five to six cents each, there is no danger of any one suffering from the competition.

About the first of this month (May) Strawberries arrived in considerable quantities, and the price came down to 15 cents per pound. The quality, of course, was much improved. The color of the sort—Longworth Prolific—always the first in the market, had assumed its usual richness and deep red, its size the customary large dimensions, and the flavor its wonted goodness and sweetness. What an admirable assistant to health and digestion is this delicious and splendid berry at this season of the year, which is lacking in all kinds of fruit except Oranges, Apples, and Bananas, of which we have become almost tired. The Strawberry just fills the bill. "Let us be truly thankful for what we receive," as we say as a very proper grace before meat.

On the second of this month (May) we observed on some of the stalls boxes of good black Tartarian Cherries, from the neighborhood of Sacramento and Vacaville.

Editorial Gleanings.

Window Gardening. — Thousands of persons, fond of flowers, are, during a great portion of their lives, confined to the house, even if they have a garden or pleasure ground in which Flora's treasures are growing and blooming. To meet this love of the beautiful and gratify the taste, the common practice is to grow a Rose or Geranium in a pot upon the window-sill, or a stand near the window. Those who have command of means have had aquaria constructed, but rarely with any satisfaction to meet anticipation. Some time since, the London *Gardener's Magazine* gave a representation of a case constructed in the window by removing the entire lower sash, and then projecting a frame to cover the whole width of the sill, inside and out, raising the lights and curving them until the top met the lower part of the upper sash; the bot-

tom of the case to be made like a drawer, showing paneling, to give artistic appearance, and to have its drainage made so that any surplus water that should be given the plants would escape from the outside. In this drawer the earth is to be placed, and the plants either set directly in it or they may be in pots, and the drawer filled to surround and cover the pots with moss. The cost of construction of this form of window-case would be quite small, and, except in severe weather, it would be no trouble, and mostly out of the way. It should be made, of course, to fit the window, and movable on approach of really cold weather. Another mode is to have a drawer eight or ten inches deep, and projecting into the room four to eight inches, having the sides, or ends rather, carried up as panels next the window, and sash-doors hung on the inside opening into the room. In the drawer pieces of rock and soil are placed, and the plants set among them and trained as they grow up the side or end panel work. The effect of this in the long French window is very good, especially when care has been taken to get plants that are good climbers, and with broad glossy foliage.

The Tuberose.—E. S. Rand, of Boston, gives a method of raising the Tuberose, by which he says they may be as easily grown as potatoes, and which was first practiced by E. W. Buswell, of that place. It is in substance as follows: Choose good, hard, healthy bulbs, and clean them by rubbing off all offsets and protuberances. They are to be planted in a gentle hot-bed, which is most easily prepared by digging a space two feet deep with a dry bottom. Make a box of inch boards a foot wide (without top or bottom), and set it on the dug space. Then bank up against it outside with the earth thrown out of the space. Then fill the space inside with a foot and a half of coarse horse manure, and put a sash over the box, and the hot-bed is made. When the heat is up, plant the bulbs in seven-inch pots, filled with mixed loam, sand, and peat, and add a small portion of old manure and powdered charcoal, after having filled the pots half full of crumbled old cow manure. Plant a bulb in the centre of each pot, with the crown at the surface. Set these pots in the hot-bed, covering with spent tan an inch; water well with a fine watering pot, cover with the sash, and the work is done. In a week give a little air if the weather is sunny and the heat of the bed fierce, covering the sash with a board or shutter. In a week or so, when the green tops appear above the tan, give more air and water, removing the shutter. Keep a moist, warm air to make them grow rapidly, and admit enough air from the outside to prevent growing slender. Gradually take off the sash on warm days and cover cool nights. Early in June the cover may be left off wholly. The warmer the aspect, the better they will grow. A constant supply of water is indispensable—never intermit. Tie the flower-stalks, as they grow, to neat stakes. As the flowers expand, the pots may be lifted to the veranda or balcony. Later plantings will give a succession until mid-autumn.

Poisoning Gophers.—The *Rural Press* contains an article on killing squirrels, from a correspondent, who says he has tried the can and ditch plan—a suggestion which was first made by the *Chronicle* over two years ago, for protecting Strawberries and gardens from the rav-

ages of gophers. This correspondent advises the mixing of phosphorus in wheat for gophers, and placing it in the holes, or in the roadways where they travel. This might be good in theory, but it is not practical. In the first place it would cost more than the benefits would be worth to dig around and find these underground highways; and in the next place, all gardens and fields should be under cultivation at this time of the year, which would break up all these roads at each cultivation. Third, gophers will not touch dry wheat now when there is so much green stuff to be had. The only way to administer poison successfully is to put it into Carrots, Beets, inferior Apples that can be had cheap, or some other kind of vegetables or fruits, and the underground nuisances are sure to smell it and find the poisoned food. To attempt to kill off gophers with poisoned wheat would be so much poison and time thrown away, for it would be covered up with dirt by the animals in their burrowing. Those who have to poison should have a small patch of Carrots, of which gophers are especially fond, and by sticking a knife into the Carrot in various places and inserting a little strychnine good results will attend. Where a hole is open it can be stuck in or laid at the opening, and the gopher will be sure to find it out.

Ashes and Manure. — The saving of wood ashes and their application to the soil is a part of the business of the farmer, and there is no part of his business that will pay him so well. During the greater part of the winter, a portion of his business should be the manufacture of manure and its preparation for application to the land in the spring, with the least possible waste of time and the labor of his teams. Ashes being a very active and concentrated manure, can always be used to enrich the coarser and less valuable materials, of which the compost heap must contain a large proportion. Even leached ashes can be used in this way to an unlimited extent. The lime which they contain is of itself a very material addition, of a high value, because it has been reduced by the action of the fire to such a fine powder that it readily comes in contact with the material with which it is surrounded. The chemical action induced by the two articles, potash and lime, aids also in generating heat in the manure heap, and to put in action the changes which reduce the raw manure to that condition which makes it of the utmost value as a fertilizer, which not only yields food to the crops, but by its action on the unfertile soil also reduces it into a better condition to sustain vegetable growth, and develop an increased production of stem, leaf, and seed.—*Michigan Farmer.*

A New Hardy Shrub — *Xanthoceras Sorbifolia.* — The London *Garden*, a weekly magazine of horticulture of the highest merit, gives with every issue of the new year a beautiful colored plate of some new or rare flower or fruit likely to prove of permanent value to our gardens. It deems *Xanthoceras sorbifolia* as the most important introduction made during the last few years in the way of hardy shrubs.

The raceme of flowers are about eight inches long—the individual flowers consisting of five petals, white, sometimes slightly rose-tinted, with a reddish centre, and an inch or more in diameter. In appearance it reminds one of a full-grown Hyacinth raceme, except that here and there the com-

pound leaves, consisting of half a dozen or more ovate, serrate leaflets, are freely interspersed. The shrub, of a bushy habit, is said not to exceed ten or twelve feet in height, blooming in April. The fruit, which very rarely forms, is described as "assuming the shape of an elongated Peach, about two inches in length, and one and a half inch in diameter." The seeds resemble those of *Kolreuteria paniculata*, near which, in the order *Sapindaceæ*, it is placed.

The plant is still rare, and not yet offered by our nurserymen. Nevertheless we think it well to familiarize our readers with the names and characteristics of novelties that promise at no distant day to become valuable to us.—*Rural New Yorker.*

A Beautiful Parlor Ornament.—A beautiful ornament for the sitting-room can be made by covering a common glass tumbler with moss, the latter fastened in place by sewing-cotton wound around. Then glue dried moss upon a saucer, into which set the tumbler, filling it and the remaining space in the saucer with loose earth from the woods. Plant the former with a variety of ferns, and the latter with wood violets. On the edge of the grass also plant some of the nameless little evergreen vines, which bear red (scarlet) berries, and whose dark, glossy, ivy-like foliage will trail over the fresh blue and white of the violets with beautiful effect. Another good plan is to fill a rather deep plate with some of the nameless but beautiful silvery and light green and delicate pink mosses, which are met with in profusion in all swamps and marshes. This can be kept fresh and beautiful as long as it is not neglected to water it profusely once a day. It must, of course, be placed in the shade, or the moss will blanch and die. In the center of this a clump of large azure violets should be placed, adding some curious lichens and pretty fungus growth from the barks of forest trees, and a few cones, shells, and pebbles.

A Sin against Nature.—Of all the blunders that the common farmer, and some others, make with others, none is so common or so hurtful, and which he is so long finding out, and of which he might know so certainly, as the practice of cutting off lower limbs. All over the country nothing is more common than to see mutilated trees on almost every farm—big limbs cut off near the body of the tree, and of course rotting to the heart. This is a sin against nature. The very limbs necessary to protect the tree from wind and sun, and just where limbs are needed most, are cut away. But the greatest injury is the rotting that always takes place when a big limb is sawed off—too big to heal over, it must rot, and, being kept moist by the growing tree, is in the right condition to rot, and being on the body, the rotting goes to the heart and hurts the whole tree. It is common all over the country to see large orchards mutilated in this way. We often see holes in the trees where big limbs have been cut away, where squirrels and even raccoons could crawl in. Perhaps the only reason these trimmers would give is, that the lower limbs are easiest got at, and some would say they wanted to raise a crop under the trees.

Leaf Photographs.—A very pretty amusement, especially for those who have just completed the study of botany, is the taking of leaf photographs. One

very simple process is this: At any druggist's get a dime's worth of bichromate of potash. Put this in a two ounce bottle of salt water. When the solution becomes saturated—that is, the water has dissolved as much as it will—pour off some of the clear liquid into a shallow dish; on this float an ordinary piece of writing paper till it is thoroughly moistened. Let it become nearly dry, in the dark. It should be of bright yellow. On this put the leaf; under it a piece of black soft cloth and several sheets of newspapers. Put these between two pieces of glass (all the pieces should be of the same size), and with spring clothespins fasten them together. Expose to a bright sun, placing the leaf so that the rays will fall upon it as near perpendicular as possible. In a few minutes it will begin to turn brown, but it requires from half an hour to several hours to produce a perfect print. When it has become dark enough, take it from the frame and put in clear water, which must be changed every few minutes till the yellow part becomes perfectly white. Sometimes the veinings of the leaves will be quite distinct. By following these directions it is scarcely possible to fail, and a little practice will make perfect.

To Indoor Gardeners. — A correspondent of the *Farmer* says: Plants kept in a sitting-room where frequent sweeping has to be done should be covered until the dust has settled, as dust upon the foliage injures the plant by retarding its growth and bloom, as leaves are to plant life what lungs are to animal life. Where scale or red spider have accumulated, as they will in a warm, dry atmosphere, or in dark situations, whale oil soap-suds showered over the leaves and sponged off on the under side, or turning the bottom up, and dipping the whole down into decoction, will remove the pests. Where plants are crowded into too small space, they will generate the aphis or green fly, and the thrip and mealy bug. Smoking or washing the plants thoroughly will destroy these also. Above all, give your plants plenty of fresh air and all the sunshine possible. But few plants will grow in the shade, and this class is mostly confined to the Begonia family and a few varieties of vines; among them are the Smilax and the common Ivy.

The Resurrection Plant.—The botanical name for the Resurrection Plant—sometimes called the Rose of Jericho—is *Anastatica hierochuntina*. It is an annual, indigenous to the Egyptian deserts. When full grown it contracts its rigid branches into a round ball, and is then tossed about by the winds. When it alights in water, or on damp ground, the branches relax and open out, as if its life were renewed—hence its name of Resurrection Plant. One of the superstitious tales told of it is, that it first bloomed on Christmas Eve, to salute the birth of the Redeemer, and paid homage to His resurrection by remaining expanded till Easter. These plants may be bought in a dry state, and will thus remain for any length of time, but will always expand when placed in a saucer of water.

The Chufa.—The Chufa, or Earth-almond, as it is sometimes called, has had several introductions into this country, but as yet does not seem to have taken much of a hold. Quite often, however, we get inquiries concerning it. In the south of Europe it grows

indigenously. It is like a rush, growing to a height of about three feet, and produces small tubers resembling "ground nuts" of the woodlands of New York. It has proven very prolific in the Middle and Southern States, and will do well enough in the south half of Illinois, and perhaps, one season with another, considerably farther north. They taste like Chestnuts, but are sweeter. Hogs are very fond of them and will do their own digging for them. As they yield largely—100 bushels per acre having been grown—it will be readily seen that it may pay to grow them. Fowls also like them extremely well. In fattening qualities the Chufa is very rich. We are glad to notice that the Department of Agriculture has ordered a supply of seed for distribution.

Over-watering Plants.—The greatest trouble with amateur cultivation of plants arises from over-watering them. The soil should never become so dry that the leaves of the plant droop, or that it will crumble under the finger, but it should not be supplied with water until it has entirely absorbed what it has received. Every year the practice of using water quite warm to the hand grows in favor with me, and now I could not give a plant the smallest sip of cold water, being sure that it would injure it. Plants that are coming into flower or in full blossom, of course, require more water than those that are not in so vigorous a condition. Saucers are quite as needful for the window garden as for the breakfast table, and every pot should be supplied with one, and if it is filled with boiling water every morning it will add to the luxuriance of the plant, and frequently no other moisture will be needed for several days. The contents of the teapot are also efficacious in plant growth and the tea leaves can be added in small quantities to the soil of the pots. Ivies are always beautified by an application of tea leaves and tea, and it is an excellent thing to wet a sponge in tea and moisten the leaves with it, as it wipes off all the dust which accumulates upon them continually.—*Ex.*

The Almond Tree.—The cultivation of this tree receives much less attention than it deserves. Not only does it produce early and bear largely, but it is independent of irrigation when once it is started. There is a considerable orchard on the San Anita Ranch which is in fine condition, notwithstanding the fact of its not having been irrigated for several years, and of its being in a dry, sandy soil. One of the cardinal advantages of the Almond nut is the fact that it will allow the producer his own time and his own market for them, since they will not spoil by delay or by transportation. Thus he is to a great degree independent of those fluctuations in prices, at the mercy of which the raiser of perishable fruits groans. The importance of Almonds is very great, and the prices paid for them are so high as to promise ample profits to any one engaging in the business here. The Languedoc is the best variety. It is said to thrive best in light, loamy soil.—*Anaheim Gazette.*

The Antagonism of Different Plants. The Berlin correspondent of *Land and Water* publishes a piece of information that will be welcome to many a farmer: "Whoever knew," says he, "of two plants being so inimical to one another as to kill the other by a mere touch. This, however, seems to be the case

when Rape grows near the Thistle. If a field is infested by Thistles, give it a turn of Rape Seed, and this plant will altogether starve, suffocate, and chill the Thistles out of existence. A trial was made with different varieties of Rape seed in square plots, when it was found that the whole ground was full of Thistles, and nobody believed the Rape was having a fair run. But it had, and as it grew the Thistle vanished, faded, turned gray, and dried up as soon as the Rape leaves began to touch it. Other trials were then made in flower-pots and garden-beds, and the Thistle always had to give in, and was altogether annihilated, whether old and fully developed, or young and tender."

Salt for Strawberries. The Strawberry growers about Alton, Ill., scatter upon the land they are going to plant to Strawberries from one to two barrels of salt per acre, to exterminate insect depredators. Mr. Hayden, of Alton, says that the Strawberry growers there have derived very beneficial results from the practice. The salt is usually distributed before plowing, but we think it advisable to first plow the land, and then scatter upon it the salt, and harrow well in; and when well dissolved, set the plants. Of course, if salt is put on the plants it will destroy them. Salt is a good fertilizer, and the land is benefited by the application.

Cypripedium Stonel.—In the collection of Orchids at the Royal Gardens, Kew, London, we saw this magnificent Orchid in bloom. No description is adequate to give anything like an idea of its real beauty. It requires a warm house to grow in, being a native of Borneo. The leaves are dark green in color, and grow about eight or ten inches long. Two and sometimes three flowers are produced on a spike which rises from the centre of the plant. The sepals are white, purple and yellow; the petals are long and yellow, blotched with purple; the lip, which is very large, is purple. In a young state the plant is apt to be rather slow to grow, but after it gets established it grows freely, and produces flowers abundantly. Among the many Cypripediums now in cultivation, there are a good many really good, and worth a place in every collection—but there are a good many worthless, and do not deserve the trouble of cultivation; but this is one of the many good ones, and should be found in every selection where there is sufficient heat.

Pretty Arrangement of Plants in Pots.—Among the prettiest things we have ever seen in the London flower market, says the *Garden*, are small pots containing growing plants of forced Lilies of the Valley, and a few fine crimson Tulips, growing out of a healthy little tuft of the common Maiden-hair Ferns. The same journal, of January 1st, said: Among the most beautiful of all pot plants now brought to Covent Garden market is the lovely little Siberian Squill, with drooping flowers of the clearest and most vivid blue color imaginable. Nothing could be prettier than pots of Lilies of the Valley and tender young Ferns, neatly but not too regularly margined with this beautiful little Alpine bulb.

Habrothamnus Elegans.—This plant is a native of Mexico, and is very useful as a spring-flowering greenhouse plant. The flowers are tube-shaped, and are produced in racemes. They are of a

deep red color; the fruit is a large red berry, and looks very ornamental when hanging in bunches—in reality, we think it looks better than the flowers do. It is easily grown from cuttings, which are rooted in a very short time. When well rooted, and weather warm enough, they are best planted out of doors during summer, and lifted in the autumn; then potted into good rich soil, they make good flowering plants the following spring. Old plants should be cut well back after flowering, and allowed a good start before being planted out. There is a variegated-leaved variety in cultivation—*H. elegans argenteus*—a very pretty plant, and deserves to be generally cultivated.

Thunbergia Harrisoni.—We hope that some of our readers will try this vine out-of-doors next summer. An English exchange (*The Gardener*) says: "Like most other climbers it grows better and makes larger plants when it can be planted out in a prepared border having ample drainage, with a compost of rough, fibrous loam, leaf-mold and a little sand and charcoal, all well mixed together." It is easy to mistake these flowers for Gloxinias, which alone will give an idea of their beauty. All accounts agree that the red spider is its greatest enemy—though easily checked if the plants are properly drained, well supplied with water and frequently syringed.

To Prevent Potatoes Rotting.—Some twenty-five years ago, when Potatoes first rotted so generally in this country, I had a lot planted on low ground—a meadow bank—and also a lot planted on a high piece of ground. When I commenced to take up my Potatoes I found nearly all those in the meadow rotted and those on the hill only about a third rotten. This induced me to select high-lying ground for Potatoes, and instead of applying the manure in the Potato row, as was almost the universal practice, I drew out and spread it on the surface any time during the winter, and when planting the Potatoes in the spring I gave no attention to the manure, but plowed the ground, dropping the Potatoes in every third furrow. The result was that I had very few rotten Potatoes, while most of my neighbors who planted in the old way lost largely of their crops. Some varieties rotted worse than others. —*Rural New Yorker.*

METEOROLOGICAL RECORD,

For the Month ending April 30, 1876.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 18 Market Street.)

BAROMETER.

Mean height at 9 A. M.	30.17 in.
do 12 M.	30.18
do 3 P. M.	30.17
do 6 P. M.	30.16
Highest point on the 15th at 9 A. M.	30.38
Lowest point on the 10th at 9 A. M.	30.03

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	59°
do 12 M.	62°
do 3 P. M.	62°
do 6 P. M.	56°
Highest point on the 27th at 3 P. M.	73°
Lowest point on the 9th at 6 P. M.	50°

SELF-REGISTERING THERMOMETER.

Mean height during the night	45°
Highest point at sunrise on the 28th	57°
Lowest point at sunrise on the 11th	40°

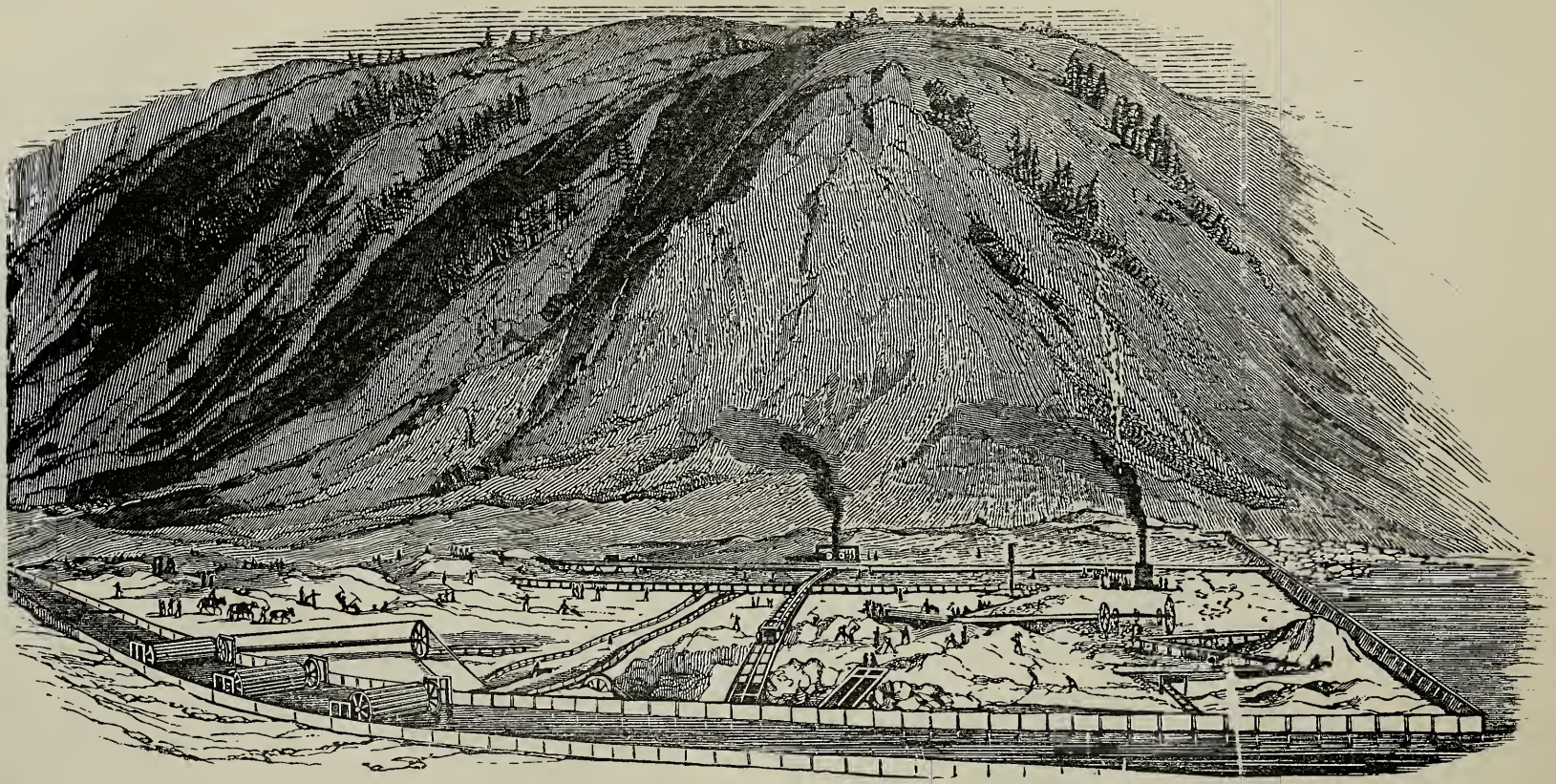
WINDS.

North and north-west on 6 days; south-west on 7 days; west on 17 days.

WEATHER.

Clear all day 11 days; cloudy all day 4 days; variable on 15 days; rain on 8 days.

RAIN GAUGE.	Inches.
3d	0.21
7th	0.57
8th	0.62
9th	0.09
18th	0.04
21st	0.08
26th	0.01
28th	0.02
Total	1.04
Previously reported	24.77
Total for the season	25.81



River-bed Mining in California, 20 years ago.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. VI. SAN FRANCISCO, JUNE, 1876. No. 6.

BEDDING PLANTS.

BY F. A. MILLER.

[CONTINUED.]

A very fine display can be made of annuals, and as this mode of "bedding" involves only a very small outlay for the proper seeds, I can see no reason why it should not be practiced more extensively. European seed-growers now furnish seeds of Balsams, Asters, Pansies, Zinnias, Stocks, etc., in assorted colors, and also according to the height to which the various strains grow. This enables us to form groups or beds of any desirable color or shape with certainty. I would advise to sow the seeds in pots or boxes, and to transplant the young plants carefully into their respective positions, reserving in all cases a few, to replace such as may fail.

Some plants do not thrive as well in this climate as elsewhere, and a little discretion should be used in the selection of plants or seeds for this purpose. Considering for a moment how much the climate of one locality differs from that of another, within our own State, it would be absurd to cultivate the Pansy during summer in the Sacramento Valley, or the Coleus in San Francisco, as bedding plants. The former requires quite a cool, moist atmosphere, and the latter delights in a warm and sunny exposure. The high winds prevailing at San Francisco and in its vicinity will prevent the successful bedding of any delicate or tender leaf plants, as Coleus, Achyranthus, Alternanthera, etc. I have never met with a good bed of variegated leaf Geraniums about San Francisco, and very rarely with a good group of Asters or Balsams, except in a very sheltered situation, well protected from the prevailing summer winds. In this vicinity, therefore, we should confine ourselves to such plants as our climatic conditions will admit, and I will mention a few which are really adapted for bedding. I have already mentioned the Pansy, which may be grown here to perfection during summer, autumn, and spring, and moderately well during winter. We must bear in mind, however, that Pansies should be replaced by young plants every nine months, at least; and if young plants are provided every six months, so much the better. They require a very rich and heavy soil, and a good supply of water. During autumn, winter, and spring,

they may be exposed to sun from morning until evening, but during summer they will do better if partially shaded. During this season I have seen as fine Pansies in this market as I have had the pleasure of seeing anywhere in the East or Europe. To have them in fine condition during summer, the soil in which they are planted should be covered fully two inches with good manure, to keep the soil from baking or over-heating during warm and bright days. I prefer good old cow manure for that purpose.

Verbenas thrive well about here, and a splendid display may be made of them during spring, summer and autumn. These like a sunny exposure, and a light, rich, sandy loam. The forms and colors of Verbenas have been improved wonderfully during the past few years, and the varieties are innumerable. Verbenas may be raised from seed or cuttings, but as the plants are very cheap, I would advise those in want of them to purchase every spring young plants of the most desirable varieties. Verbena seed usually offered in seed stores turns out mostly unsatisfactory, and to raise them from cuttings of old plants in this climate is rather uncertain, and in most cases labor lost.

German Stocks for summer, autumn, and winter give usually satisfaction, most of which depends upon the right kind of seed. The seeds of Stocks may either be sown in the ground where they are expected to flower, or they may be sown in pots or boxes, and the young plants transplanted when they are about two inches high. Before transplanting, they should be exposed for a few days to the open air in order to harden them; this is very important when the plants have been raised under glass.

Zonale Geraniums, both single and double, are admirably well adapted for bedding out. Unfortunately, our people seem to have some prejudice against them, under the plea that they are too common. I regret that such is the case. They certainly deserve a conspicuous place in our gardens; a bed of glowing Zonales will always form a bright and cheerful object. Nowhere have I seen a better illustration of this than at the grounds of D. O. Mills, Esq., at Millbrae. There, Mr. Ulrich, his landscape gardener, has produced a grand effect with Zonale Geraniums, which could not have been produced by any other plant. Happily, Mr. Ulrich's arrangement is such that the distribution of the scarlet Zonales contrasts well with the surroundings, and that the predominant color is just sufficient to break the monotony which characterizes so many of our suburban grounds.

[TO BE CONTINUED.]

MAN'S AGENCY ON THE EARTH FOR GOOD AND FOR EVIL.

BY NATURALIST.

It has not been many years since California was settled by civilized races of mankind, and yet already an observing person may perceive many influences that have been exerted on inanimate nature on this coast, some of which have effected a deterioration of climate and other matters, while other influences have improved them. For instance, by the destruction of forests for their timber, and accidental or intentional burning of them, there has been produced a considerable deterioration of climate in many parts, rendering them drier, and therefore less productive; while in other sections it is possible that the climate may have been improved, large tracts being rendered

habitable and healthy, by draining and embanking, that were before useless, and tribes of wild animals have been removed, which in man's absence had overrun the country. Then on the other hand, again, the introduction by man of certain animals has made a great impression upon nature. The great persistency and energy with which vegetable life forces itself in wherever there is opportunity, and the mode in which the smaller tribes of plants pave the way for the larger, until such forest trees or shrubs rise as the circumstances will allow, are facts too well known to render it doubtful that in all cases there will exist trees and brush wherever trees and brush can be induced or are allowed to grow. Certain animals, such as goats and deer, are especially injurious to young trees, and when introduced into a country in which they are not indigenous, they soon check and destroy forest and plant growth. Thus in some countries, as instances of forests partly removed, we find that the presence of a few goats, which do no great harm to existing grown trees, entirely prevent the continuation of forest growth by destroying the young trees. Throughout the Indian Islands and Greece, for instance, it is said forests once covered the land. The forests have been destroyed, and the destruction dates from the encouragement of the goat at the expense of the pig, which lives, as is well known, upon the mast. The destruction of wolves by human means must also tend to the increase of the browsing animals and the destruction of the forests. In this way, incidentally, the extirpation of certain tribes of animals affects the vegetable covering of the earth. It is exceedingly difficult to measure the extent of climatic change produced as the ultimate result of these forces; but that there is a very great effect, no one familiar with the facts of the case will attempt to deny.

Man exerts influence in various ways. He destroys birds because they eat fruit. But these birds also feed upon the insects; and a worse evil is sometimes produced by the increase of insects than is corrected by the destruction of the birds. He destroys the wild animals, and introduces tame and domesticated kinds. But some of these are occasionally multiplied into nuisances; witness the sometimes great destruction of sheep by worthless dogs. Man extirpates worms and some grubs, which might do him the greatest benefit if left alive. His influence, when conscious, is often in a wrong direction; and when unconscious may turn either favorably or unfavorably for his interests, according to circumstances over which he has no control. Even in the case of food recognized as valuable, such as the salmon and the oyster, he will often, with the most senseless and stupid carelessness, destroy the race for the sake of a few years' supply, unless stringent laws are put in force to prevent this, which happily our new Sporting Club is effecting. As wooded lands are by no means adapted to human requirements, seldom furnishing much, if any, very valuable vegetable food by their fruits, or very important animal food by the fowls and beasts naturally resident in and about them, it is certain that the first result of any permanent settlement of men in a country must involve the destruction of woods. Even for fuel they need to cut down a part; but for cultivation, they require to remove a large portion of the forest growth of a newly settled district. Fire is generally used to remove the surplus timber, as the result of burning is highly favorable to the

production of a valuable soil for the growth of food crops. Forests have generally yielded very soon to the repeated attacks made on them, as people multiplied and wants increased. The planting of trees checks the movement of winds, and thus in a sensible degree diminishes cold. As soon, therefore, as possible, suitable and useful trees should be planted in those spots where the native forests and woods have been entirely extirpated, and tracts of country found naturally bare of timber should be clothed in many parts with valuable vegetation of this description, besides an abundance of profitable fruit trees. Especially are plenty of trees desirable for California, so often subject to droughts, and as the beneficial influence of forests on rain have been very distinctly shown in tropical countries, so it can not be doubted that in our partly temperate and partly semi-tropical climate they are very important. In wooded and undrained countries the atmosphere is generally humid, and rain and dew fertilize the soil, and the result is similar in its nature to that produced on coasts in the vicinity of a great ocean. The absence of wood is a great cause of the aridity of Spain. In France many districts have suffered by clearing. On the other hand, examples of the beneficial influence of planting and restoring woods are not wanting. In Scotland, where many miles square have been planted, the effect has already been manifest, and in southern France similar observations have been made. Forests affect the supply of water to springs, for they protect the fallen rain from evaporation, and give it time to sink far in the interior. In the draining of fens, marshes, and tule lands, and other low tracts of land near the mouths of rivers, or on a coast line, is one of the works by which man largely influences nature. The soil thus preserved, though originally not above high water level, will, if not sinking, gradually acquire a considerable height by the effect of continued vegetable growth; but there is sometimes a shrinkage and settling of the earth that more than counterbalances this gain. Irrigation requires some notice as a human agent. It is particularly desirable in the vast extent of some of the great valleys in this State. In the south and east of Europe, in Asia Minor, and in many parts of Asia, this method is uniformly and systematically adopted to insure an increased production. It is needed there as in California from the nature of the summer climate, which is continuously dry, partly from the porous nature of much of the soil, either composed of gravel or of porous and fractured rocks, etc. Besides, the ways in which man is modifying the climate and natural features of the earth, by removing or planting forests, constructing embankments, making or emptying lakes, altering the course of streams, checking torrents and inundations, or keeping out the sea by making or fixing impassable barriers, there are others yet to be taken into account, such as the intersection of the Isthmus of Suez, the cutting across of the Isthmus of Darien, and the tunneling of the English Channel between England and France, etc. Much smaller, easier, and less costly works than these are capable of bringing about great results, and no one can say where the changes thus induced can stop.

The *Revue Horticole* states that the practice of watering store and greenhouse plants with tepid water is wrong. A much better result is obtained by using the coldest water within reach.

CALIFORNIA FRUIT REPORT FOR 1875.

BY F. STRENTZEL.

Although the following report is for last year, yet, coming from so eminent a fruit raiser, we consider it well worth publication. It is addressed to P. Barry, Esq., chairman General Fruit Committee, American Pomological Society, and is written from Alhambra, Contra Costa County:

DEAR SIR: * * * Our winter rains being rather light, the rainfall for the season through the extent of the midland counties not overgauging fifteen inches, and the usual spring showers, with one exception, entirely wanting, it is remarkable that even in localities without facilities for artificial irrigation the fruit trees made generally a very good, and the Grape vines an extraordinary growth; this is attributable to prolonged cool weather prevailing during the growing season. The trees were overloaded with blossoms, and promised an abundant yield, but in many places the severe frosts of the first days of April destroyed some varieties entire, and decimated others. The last case was rather beneficial, thus affording the trees a much needed season of rest and recuperation.

This occurrence afforded another lesson, teaching which varieties best withstand those freezes. Thus, among Apples the Early Astrachan and the Harvest produced full crops, and side by side with them the Strawberry only yielded one-fourth; Pennock, one-half; Lyscom, three-fourths, and Baldwins, an entire failure; but Newton Pippins were full, whereas Holland Pippins, King of Tompkins, Russets, and Rhode Island Greenings, were not above one-fourth. Pears were rather abundant. Apricots and soft-shell Almonds suffered greatly, and in some localities, Peaches, Plums, and Cherries. All small fruits did very well. Grapes, except in a small district around Los Angeles, were not injured at all, which is ascribed to the practice now prevailing of late pruning, by which the early growth was somewhat retarded, thus escaping a freeze. It is noticed, also, that considerable elevations, or locations where trees are shaded from the full glare of the sun, are advisable selections for the growth of early blooming plants. Caterpillars were very numerous in some districts, and wherever not destroyed speedily denuded the trees of foliage and blossoms.

The extent of our State, bounded by the Pacific Ocean and the high mountain wall of the Sierra Nevada, furnishes all desirable varieties of soil and favorable configuration, climatic peculiarities, and facilities for culture, which begin to be fully appreciated, so that all species of fruit grown anywhere throughout the extent of the temperate and semi-tropical zones can be accommodated with a congenial home for thriving to perfection; hence, to name one or another variety of certain species as doing best would be a discrimination not conveying an adequate impression. It can probably be more fitly said, that the profusion with which our markets are supplied evokes a very critical taste, requiring for gratification the finest of its kind; so, nothing but the juiciest and largest red-streaked or mottled Apples; the most spicy and melting of Pears; the glossy Black Tartarian among Cherries; the Royal in Apricots; the bloomiest of Plums; only a York, Crawford, or Stump the World, among Peaches, have a show for remunerative sales.

The crowned Pomegranates, the Fig, the Olive, and the Citrus family all grow fat anywhere, if supplied with the

sufficient pabulum of moisture; and the queen of them all, the luscious Grape, holds dominion over hill-side and vale, humid or dry. It may be distilling its nectar out of the primitive elements.

Selected Articles.

THE INSTINCTS OF PLANTS.

No doubt exists among botanists that varied and complicated movements take place in many plants. But such have been little investigated, and the nature and end of them have generally been passed over in silence. They are, however, very clearly examples of instinctive movement, and in many cases serve highly important and essential ends in the vegetable economy, although from our imperfect observation we can not always point out decidedly the results that they produce. A very familiar instinctive movement that occurs in plants is the opening and shutting of the flowers. Generally, these organs are spread open so as to expose the stamens and pistils to the action of light during the day, and close during the dark, so as to protect from external injury these delicate organs. A good deal of variety, however, prevails in this respect; some plants, as the *Portulacca Oleracea*, only open their flowers for about one hour daily, and this at mid-day. The *Oeneothera Biennis*, on the contrary, keeps its flowers shut all day, and only opens them when night comes on; and when the sun rises the flowers close again, unless it be a very cloudy day, in which case the plant only shuts its flowers partially, or not at all. The *Nymphœa alba*, or Water Lily, which, when night comes on, not only closes its flower, but gradually lowers it until it is beneath the surface of the water, and thus reposes submerged. Another example of an instinctive movement for a very definite end may be noticed in the *Berberis repens*, commonly called Barberry. The flower of this plant contains six stamens which surround a single pistil, the stamens being inclined back upon the petals, and so away from the pistil. If, however, any of the stamens be touched near the base, it immediately starts forward to the pistil, and strikes the top of that organ with its anthers. It soon resumes its original position. Of course the same effect is produced whenever an insect alights upon them. Whenever the anther is ripe, and an insect enters the flower, the filament strikes against the pistil with such force as to burst the anther, and thus scatter the pollen upon the pistil, and thereby produce a seed. There is another plant, the *Cactus Tuna*, which, whenever an insect enters its ripe flowers, immediately inclines all its stamens over the pistil, in a somewhat similar manner. If the stalk or stamen of the Catastum be disturbed, it springs up with such violence, that the top of it is broken off, and actually darted to a very considerable distance. Of the Century Plant (*Agavœ*) the members of this family afford very extraordinary instances of instinctive movements. Plants belonging to it are known from all others by having their hollow grain contained in bags, from which their escape seems almost impossible. However, when the time comes for their seeds to be formed, a small tube grows from each hollow grain; and these tubes all direct themselves toward a thin spot of the bag which holds them. This they pierce, and then direct themselves toward the stigma; to effect this object they have sometimes to ascend, sometimes to descend, and at other times to proceed outward at right an-

gles; but they invariably hit the exact direction, according to the position of the flower, and arrive at the stigma; thus the seed is fertilized.

The motions of the leaves of plants must have been noticed by every one. The most common instances of such are called, in ordinary language, the sleep of plants, although the expression is a bad one. The phenomenon was first noticed by Linnæus. He was carefully cultivating some *Lotus Jacobea*, or Bird's Foot Trefoil (which abounds in great quantities in this State), one of which had two flowers. Chancing to look at the plant one evening, the flowers were not to be seen, and Linnæus supposed that some one had plucked them; the next morning, however, they were again visible, but on returning at night they had once more vanished. The plant was then carefully examined, and it was found that the leaflets had altered their position, approached one another, and by so doing concealed the flowers. It has been ascertained that plants kept constantly in the dark open and close at regular intervals. The manner in which leaves change their position is various; some raise their leaflets so that their upper stalks are brought into contact, while others depress theirs so that their under surfaces meet together. The sensitive plants afford very striking illustrations of movements performed by vegetables. The most common of these is the *Mimosa Pudica*, an annual, the leaves of which fold upon being touched. Many other plants possess this property of taking on them extraordinary motions when anything comes in contact with them, the object effected by them all is, probably, to shake grasshoppers and similar vermin. Among these other plants, the leaves of which assume such contortions, are species of *Smithia* and *Biophytum*. In Southern California a plant grows called Hon de Zedo, on account of its performing a sort of salaam or bow on being touched. Still more surprising acts of motion take place in the lower plants. Among the Confervæ is a genus called *Oscillatoriæ*, the members of which might almost be mistaken for a number of worms writhing together. These shift their position with very considerable alacrity. If, for example, a patch of them be placed in water, in a plate, and a black bell glass be inverted over them in such a manner as not to quite touch the bottom of the plate, the Confervæ in a very short time will be found to have glided out at the side of the bell glass most exposed to light. They have been observed to travel in a few hours ten times their own length. The young of certain species of them, too, when separated from the mother plant, move onward in the water until they reach a shady spot, when they take root and remain fixed. Burnett, who watched their movements in a glass conservatory, made the rather remarkable discovery that although they might be temporarily restrained by force, yet that when the restraint was removed they immediately moved about with increased speed, so as to make up for the time they had lost. A plant grows wild in this State (although cultivated with great care in Europe) called the *Dionea Muscipula*, or Venus's Fly-trap. The leaves of this plant consist of a flattened petiole, at the extremity of which are two fleshy lobes, which lie, when expanded, in the same plane with the petiole. These lobes are capable of being elevated and brought together in a position perpendicular to the surface of the petiole. They are furnished with cilia or bristles around their margins, which stand nearly at right angles with

their upper surface. When a fly or other insect, crawling over the surface of the lobes, touches either of these latter bristles, the irritability is excited, and the lobes suddenly close, and the insect is imprisoned. Some little time after the death of the insect, the lobe unfolds and waits for another victim. It appears probable that the plants make use of the fly, although it is difficult to conceive in what manner they can do it. A physiological experiment was made on two plants of *Dionea Muscipula* selected for this purpose, of nearly equal size and health; both were kept under similar circumstances, save that one was restrained from flies, worms, and all kinds of animal food, while the other was daily fed with small strips of beefsteak, the result of which experiment was that the epicurean plant languished on its lenten diet, while the vegetable beef-eater flourished on its more substantial fare. See Burnett's essay on the "Adumbrations of a Stomach in Vegetables."

CULTIVATION OF BASKET WILLOW.

There are fifty-nine species of Willows growing in the United States. The White Osier (*Salix viminalis*) is most generally used by basket-makers. It differs very much from the wild, dark-colored Willows that grow along the margins of creeks and in marshy places. The White Willow (*Salix alba*) is also much used in this country, the same that is used in many places for hedges. When grown especially for basket-makers, the Willow should be planted on dry land, and cultivated as described in *Appleton's Journal:*

The land being thoroughly prepared, as for any other crop, the sets are planted at distances depending upon the variety of Willow; some are placed as close as 16 by 18 inches, and coarser kinds 20 by 12 inches. The sets are pieces of twigs of the previous season's growth, about a foot long, and sharpened at the lower end. A frame of slats is used to secure regularity in planting; the slats are the proper distance apart for the rows, and upon them are cut notches indicating the places for the sets. The planter, having his hand protected by a leather shield, thrusts the sets into the soil, one at each notch on the frame, pushing them into the ground in a slanting position, and quite out of sight. The object in planting so thickly is to induce a growth of slender upright shoots, without any side branches. The shoots produced the first season after setting are small, and of little or no value, but they must be carefully cut, or the crop of the second year will be much injured. The crop of the third year is expected to pay all the expenses, rent, taxes, etc., of establishing the plantation; and the land is kept in Willows ten or twelve years, when the roots are plowed and grubbed out, and the land given to some other crop. The land must all the time be kept clear of weeds, and if it shows signs of exhaustion, manure must be applied. The Willows are cut as soon as the leaves fall, with a heavy hooked knife; the cutting should be close to the ground, as stumps would be liable to the attacks of insects and diseases. The rods are tied in bundles, having a girth of three feet at the larger end. The after treatment of the crop depends upon the use for which it is intended. If for peeling white, the bundles are set upright, with their butts in six or eight inches of water; and in the following spring, when growth begins, the bark peels off readily. If for peeling buff, as it is called, the bundles are set upright until suffi-

ciently dry to be put under cover, or stacked and thatched over. To peel these dried Willows, they are steamed or boiled; the baskets made from them are much firmer and more durable than those from the white rods. The peeling is usually done by drawing the rods through an implement made of a half-inch iron rod, something like a prolonged letter V. Several machines have been invented for peeling, some of which do the work very completely.

CALIFORNIA COFFEE.

The Stockton *Independent*, of recent date, thus speaks of native Coffee:

"We were shown yesterday by Willard T. Jones, of this city, a handful of native Coffee that was gathered in its wild state from the foot-hills of California, where it is said to grow in the greatest profusion. The existence of this berry has long been known, but was generally supposed to bear only a fancied resemblance in form and taste to the Coffee of commerce, and but little attention has been paid to it. A careful inspection and botanical analysis of it, however, prove it unmistakably to belong to the order of *cinchonaceæ*, the genuine Coffee-plant. It is described as a scrubby, bushy evergreen plant, growing to the height of six or eight feet, with long, smooth, shining leaves of a dark green color; its trunk is covered with a gray colored bark, and its blossoms grow in thick clusters. When ripe, the berries are jet black, resembling a Cherry, and each contains two grains of Coffee, whose flat surfaces lay next each other, surrounded by a pulpy matter about a sixteenth of an inch thick. If allowed to remain, this pulp dries around the kernels in a hard shell that has to be removed by an artificial process. If the berries are taken after they ripen, and before the drying of the pulp takes place, the pulp can be removed by breaking the skin and subjecting it to a washing process, and afterwards drying the inside grains in the sun, as Mr. Jones did with the specimens he showed us. The kernels come out of the pulp white, but a few minutes' exposure to the sun turns them to the brown Coffee color. The specimen shown us resembled the Mocha Coffee, except the kernels were smaller, and the central groove was not so marked. The substance of it was not so solid, but it had the genuine taste of an inferior article of Coffee, showing that it only required cultivation to develop its possibilities. It may be considered a fact of the greatest importance that the existence of this plant, growing in such rank abundance in our foot-hills, and indigenous to our soil, demonstrates the possibility of making the growth of Coffee one of the leading industries of the State."

YUCCA FILAMENTOSA.

This plant is one that improves on acquaintance. We never thought much of it until we used it at home, and now its loss would be severely felt. It is the last plant we should use in symmetrical plots, or among flowers whose attractiveness depends in part upon a precise arrangement and uniformity of size. We first recognized its fine adaptability to certain situations upon seeing it in large plots along one of the lake banks of Central Park. It there looked to be the right plant in the right place, and imparted a wild, half-rugged, picturesque beauty that few other hardy plants could supply. As an undergrowth in shrubbery borders — or planted between Pines and Spruces, as we have seen them — the evergreens

planted rather closely together so as both to conceal the property line and serve as a wind-break — or clumped here and there in the wild garden, they are very effective. Wildness is the Yucca's charm, and it suffers the moment it is placed in the company of flaming colors or "tropical amplitude of leafage."

Its pagoda-like inflorescence is very fine, and may put to blush a hundred petted hot-house things that need to be washed, smoked, forced and rested throughout the year. It is borne upon a scape four to six feet high, in a pyramidal panicle of simple racemes. The color of the bell-shaped flowers would be white but for a slight tint of green. The plant is nearly acaulescent, and its lower leaves rest upon the ground, while the upper ones are more upright and clustered as in a rosette of spikes. These leaves are a perfect evergreen, and retain a fresh color through the most trying vicissitudes of winter.

Unless it is desired to save seed (which germinates readily) it is best to cut out the scape as soon as the flowers have disappeared—since the dry, oblong pods are unsightly.

We have never found that it is particular as to soil or situation, thriving with us both in sandy and in wet places. It is a splendid rockery plant, and in summer plots harmonizes well with Sedums, Aloes, Cacti—or, among hardy plants, with the dwarf evergreens —with *Aralia spinosa*—the hardy grasses and ferns. Here we have an evergreen, perfectly hardy — enduring at least twenty degrees below zero without injury—that bears in summer hundreds of flowers more beautiful than most hot-house subjects—that is easily propagated—that will stand storms, winds the fiercest, heat, drouth, moisture; and yet we seldom meet with it.

MEMORIES.

When the gray twilight softly spreads
Her robe o'er earth and sky;
When the far mountains' shaggy heads
Are lost to human eye;

When the tired birds at eve hath sought
Sleep in the tuneless bower;
When the last bee wings homeward, fraught
With forage from the flower;

When the dark Pinewood dimly shows
Its deepening tints of green;
When in the west with crimson glows
The sunset's closing scene—

I watch the glimmering shadows kiss
The threshold of the night,
And o'er my heart a soothing bliss
Falls in the waning light;

And grosser thoughts that sternly cling
To life's dull sober day,
Leave me, as swallows on the wing
Flit from our sight away,

And soft as ripple on the lake,
Within my bosom rise
Half-whispered yearnings, that awake
A thousand memories—

Sweet memories, that only come
To woo my waking dreams,
When twilight shrouds the woodlands dumb,
And slumbers on the streams—

Of faces that I loved of yore,
And songs the loved ones sang,
And children's voices—heard no more—
That through the greenwood rang.

O spirit treasures! ye are mine,
And to my heart belong,
Yet linger not till I repine,
Or sing a sadder song;

But let me, while I still have power
To catch the sunny glow
Wafted from memory's blissful bower—
The shrine of long ago.

—*Chambers' Journal.*

QUESTIONING THE SOIL.

The Science of Chemistry, by its searching analysis, is able to reveal not only the elements of every soil, but the constituents, also, of all the grains, grasses, and vegetables that grow upon

the farm. Clearly, then, if science can disclose with accuracy all the nutritive elements that enter into growing plants, and if it can, at the same time, indicate the relative quantity of each of these elements contained in a given soil, it should be able, by bringing together these fundamental facts, to simplify the processes of husbandry, and render the business more profitable to the farmer by insuring greater certainty and larger results. If the chemist can tell the owner of the soil just how many pounds of each kind of plant food are contained in a square rod, or an acre, and can also tell him with the same certainty how many pounds or ounces of each of these are contained in a bushel of corn, why should not the farmer be able under a teaching so definite and so luminous, to supply precisely the amount of nutriment required by the growing plant for any given result, so as to obtain one hundred bushels of corn, or even one hundred and fifty bushels from an acre, with less trouble and with greater certainty than he now gets thirty or forty bushels? In other words, why does not agriculture become, under these conditions, an exact science? The answer to this inquiry is very plain. The chemist who tells the husbandman just how many pounds of corn elements are contained in an acre of soil, does not and can not inform him as to the condition of these elements; whether they are free, active and available, or absolutely inert; and secondly, the theory which teaches what fertilizers to apply, and in what amount, for a yield of fifty or one hundred bushels per acre, can not determine in advance what proportions of these elements will find its way into the growing grain. There is no certain way of getting this knowledge, except by actual experiment. A direct appeal to the testimony of the soil will secure the information that chemistry has failed to impart.

TOP-DRESSING ORCHARDS.

The London *Garden* says: "Top-dressing can be applied to orchard trees on grass with the perfect confidence that improved crops will follow, although the grass itself may be the first to show the benefit of the top-dressing. There is before us an instance of an orchard of Apple-trees planted on thin gravelly soil; the trees were covered with moss and stunted, although not by any means old (about twenty-five years). The grass of this orchard had been mown year after year for the sake of tidiness, thus exhausting the soil more than the trees did. A rather rough system of top-dressing was inaugurated at a sacrifice of appearances; all sorts of refuse were wheeled or carted into the orchard and spread over the surface, such as sifted coal ashes, old decayed tan, the old soil and rubbish from the potting bench, sweepings and scrapings of roads, etc., until a considerable thickness of material had accumulated. The first result was a troublesome growth of grass, which was kept down with the scythe, but not cleared away—on the contrary, allowed to rot on the surface. By and by the trees began to emit quantities of young roots from the lower parts of their boles into the top-dressing, and the second result was that the next crop of Apples was considerably larger and of a much improved quality; the branches were severely thinned to admit light and air, well dusted with quick lime to remove moss and lichens, and they were amply repaid by the annual returns afforded by this very simple attention."

FRUIT VS. MALARIA.

We find in the revised edition of the "Fruit Culturist" the following interesting note:

"Residents in the Western States and other regions, where intermittents and similar diseases result from malaria, state that a regular supply of ripe, home-grown fruit is almost a sure preventive. Eat the fruit only when fully ripe, and eat only moderate quantities at a time, and little need be feared. The residents of such regions should, therefore, not omit the earliest opportunity for a supply. Plant large quantities of Strawberries for early summer —they will bear abundantly a year from the time they become established. Also plant many Currant-bushes—for these are a most healthy and excellent fruit, very hardy—and if in abundance, will last through all the hottest parts of the summer. The Doolittle and Orange Raspberries are profuse bearers—the former very hardy, the latter generally so, but should be laid down and covered with an inch or two of earth for winter. [This is not necessary in California.—Ed.] The Rochelle Blackberry, pinched in when three or four feet high (about midsummer), will bear abundantly, and prove hardier than if the canes run up without control.

"Delaware, Clinton, and Concord Grapes are early and hardy, and will bear in two or three years from transplanting. Dwarf Apples, on the Paradise and Doucin stock, will flourish in any locality, and begin to bear profusely in three or four years, and on the Paradise stock often in two years. Some varieties bear early on common stock; such, for example, as the Dyer, Lowell, Early Strawberry, Sops of Wine, Oldenburgh, Porter, Belmont, Jonathan, etc.; but these will, of course, bear much sooner as dwarfs. The Bartlett, Washington, Julienne, Flemish Beauty, Beurre d'Amalis, Onondaga, Howell and Seckel Pears, produce early as standards, and the Louise Bonne of Jersey as a dwarf. Houghton's Gooseberry grows with great vigor, is very hardy, and in two or three years affords almost solid masses of berries in the branches. Such fruits as the above should be planted out on every new place, as indispensable to health as well as to comfort and economy; and emigrants to new countries should take a supply with them, as the best medicine chest they can provide."

WITHOUT STRAWBERRIES.

From the bottom of our heart we pity the family without Strawberries. To be compelled to live year after year without enjoying one of the most delicious fruits God in His goodness has given us, is cruel. To be deprived of it, when it is so healthful, so delicious, so desirable every way, and when it can be raised so cheaply and abundantly, is a shame. If a man is a married man, he not only wrongs himself by not having them, but he is cruel to his wife by preventing her from enjoying them. If he is a father and loves his children, he will plant them to be happy and healthy, by eating all they want of them, week after week while they bear. Plant them; plant them, everybody! Let every family rejoice in a patch of Strawberries. Let them go to the loaded vines and pluck the aromatic, scarlet beauties, and eat their fill. Let Strawberry short-cakes, and Strawberries and cream supply the table. 'Strawberries for everybody is the prayer of the *Rural World*. Yes, and the other fruits, also — Raspberries, Blackberries, Grapes, Gooseberries,

Currants, and all of the tree fruits. More fruit food is needed by the farmers.—*Rural World.*

We believe if more such cheap luxuries were placed on the table of the farmer, our country homes would have more attractions, and our young men be less apt to seek other associations; and here we would say if the farmers' sons could see what we have seen, and hear what we have heard, the past winter—the request for "something to do" from finely dressed young men and the begging for employment—they would be more content where they are and not so quick to leave the farm for the city. Young man, *stay where you are* and do what *you* can to make home attractive and beautiful.

THE MOON AND THE WEATHER.

The notion that the moon exerts an influence on the weather is so deeply rooted that, notwithstanding all the attacks which have been made against it since meteorology has been seriously studied, it continues to retain its hold upon us. And yet there never was a popular superstition more utterly without a basis than this one. If the moon really did possess any power over the weather, that power could only be exercised in one of three ways—by reflection of the sun's rays, by attraction, or by emanation. Now, as the brightest light of a full moon is never equal in intensity or quantity to that which is reflected toward us by a white cloud on a summer day, it can scarcely be pretended that weather is affected by such a cause. That the moon does exert attraction on us is manifest—we see its workings in the tides; but though it can move water, it is most unlikely that it can do the same to air, for the specific gravity of the atmosphere is so small that there is nothing to be attracted. Laplace calculated, indeed, that the joint attraction of the sun and moon together could not stir the atmosphere at a quicker rate than five miles a day. As for lunar emanations, not a sign of them has ever been discovered. The idea of an influence being produced by the phases of the moon is therefore based on no recognizable cause whatever. Furthermore, it is now distinctly shown that no variations at all really occur in weather at the moment of the changes of quarter any more than at any other ordinary times. Since the establishment of meteorological stations all over the earth, it has been proved by millions of observations that there is no simultaneousness whatever between the supposed cause and the supposed effect. The whole story is a fancy and a superstition which has been handed down to us as uncontradicted, and which we have accepted as true because our forefathers believed it. The moon exercises no more influence on weather than herrings do on the government of Switzerland. — *Blackwood.*

PROPAGATING PLANTS FROM LEAVES.

For centuries it has been known to florists that certain kinds of plants could be readily propagated by cuttings of the leaves; in fact, this is one of Nature's methods of multiplying hundreds and thousands of different species. The leaves of some are broken off by the wind, and soon after touching the earth they take root, and become individual plants, like their parents. This natural method of reproduction or perpetuation of species is mainly confined to plants of the tropics, but is occasionally seen among those of the temperate climates. But under artificial condi-

tions, such as our propagating houses, the kind of plants which are susceptible of being multiplied in this manner has been greatly extended during the past few years, and our scientific florists have now reached a point in which they consider each plant cell an embryo bud, and a failure to make it take root and become a distinct, living organism is attributed more to a want of knowledge of the proper conditions necessary to insure its life when separated from the parent than doubts in the truth of the theory advanced above. At first only the more succulent plants, like the Cacti, were thought susceptible of propagation in this manner; then a step forward was made, and the Begonias were multiplied by leaf cuttings, since which there has really been no limit to the possibilities in this direction. Geraniums, Coleuses, Fuchsias, Roses, and nearly the whole range of cultivated plants, have been experimented upon with more or less success.

What were considered great achievements in propagating plants a few years ago would now scarcely provoke a remark, for we are progressing as rapidly in horticultural science as in any of the kindred or distantly related branches.

If we have not as yet been able to grow Oak-trees from leaves, it is no sign that it can not be done, for the limit of possibilities in such matters is constantly receding before the indomitable energy and skill of each succeeding generation.—*Rural New Yorker.*

Take soot from a chimney or stove where wood is used for fuel, put it in a vessel, and pour hot water upon it. When cool, water your plants with it. The effect is wonderful in producing a rapid growth and richly tinted flowers.

Correspondence.

HOW TO EXTERMINATE GOPHERS.

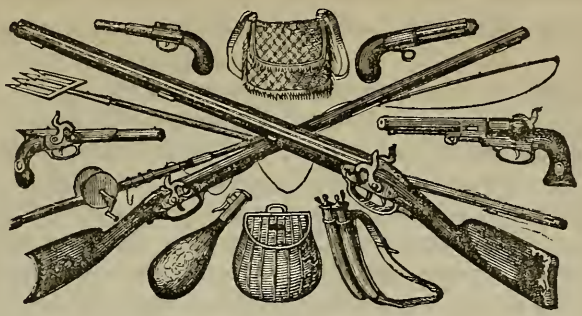
Editor Horticulturist:—If you wish to publish the following suggestions, they are with pleasure at your service:

The little piece of land which destiny gave me for my home being much infested with gophers, I determined to destroy all such enemies so ruinous to my labor. The land being uncultivated, I found great numbers of them. The first and second years I was entirely deprived of the benefit of my exertions through them. I then began to study their habits, and have come to the conclusion that the only way to exterminate them is by digging the soil. My orchard and vegetable garden cover about three acres of land. Last summer, after the plentiful showers we had in June, I spaded the three acres two feet deep. By this process the roots and weeds were exposed to the sun. After the first rain last winter I went over the land again with the spade. The rains of the whole winter penetrated the ground, and the gophers were killed. I spaded this spring the third time, have planted a variety of vegetables in the garden, and have not now a single gopher; but before spading they were there in thousands.

A. Honcharenko.

Ukraine, Cal., May 10, 1876.

Accidental Pruning.—An old New Englander once remarked to us when we advised him to pinch back his Blackberry bushes, to keep them within bonds and make them bear better: "That's so! I can remember when I lived down at Darmouth, that we always found the most Blackberries on the bushes that the old cow had browsed down."



Rod and Gun.

FISHING IN LAKES MERCED, SAN ANDREAS, AND PILARCITOS.

BY E. J. HOOPER.

Lake Merced, or Laguna de la Merced, as it is more properly called, is situated on our peninusula, six miles and a half from the city, in a southwesterly direction, and from one-quarter to half a mile from the ocean beach. It comprises two bodies of water connected by a short, narrow strait or channel, through which the more southerly and larger body of water is continually flowing into the smaller one, with a very moderate or slow current. The lake has a general northwesterly direction, and at its southern extremity crosses the southern boundary of the city and county of San Francisco. At the northern extremity of the smaller or lower lake is the outlet (carefully guarded by a grating to prevent the fish from escaping), a narrow stream flowing through the sands to the ocean beyond, but at this time I observe this stream is stopped up with sand. The banks of both divisions of the Laguna de la Merced are generally abrupt and high, though the westerly shore descends in an easy slope from the coast range of hills which shut the lake in from the sea, and forms a barrier to any ingress of salt water. This gentle slope of the western shore affords anglers a good opportunity to bait-fish from it, about which more anon. The area of both arms of the lake is estimated to be in the neighborhood of 400 acres, and the average depth of water some 22 feet. This noble piece, or rather pieces of water, about two or three years since, was leased by the California Acclimatizing Society for the purpose of stocking it with game fish—the silver or Sacramento salmon (*salmo quinnat*), Lake Tahoe trout (*salmo irrida*), and salmon trout (*salmo trutta*)—for the purposes of angling recreation for the members of the Society. Last year, and the present as far as tested, these fish have been sufficiently numerous to afford good sport. The new Sportsman's Club of California and the Acclimatizing Society have lately formed a union of interests, and have control of the lake for fishing purposes. The initiation fee to the Sportsman's Club is $20, and $3 thereafter for quarterly dues, and $1 a day for a permit to fish. A club house near the mouth of the lake has been fitted up for the convenience of members and invited anglers, with closets, sleeping berths, stabling, sheds, boats, etc. Members who have the privilege of inviting angling friends have to pay for the same two dollars and fifty cents *per diem* for a permit for their friends to use the lake, boats, and other accom-

modations provided for the purposes of fishing.

It is usual either to angle from a boat or from the shore. Of course, when from a boat, it is anchored either from the head or stern, or both. The baits in most general use are earthworms, shrimps, boiled or unboiled, clams, small fish, or pieces of fish. When fishing from a boat, a rod about twelve or fourteen feet long, or even less, is most convenient, although a long pole of sixteen or eighteen feet has the advantage of being used a greater distance from the boat, and consequently alarming the fish less. From the shore a rod of about eighteen or twenty feet long, if made of light materials, is a decided advantage, in order to reach out a good distance and command a sufficient area of water. Of course in both cases a reel or winch is requisite, as the fish in this lake are very strong and game, especially the salmon. The fish, this year, are more than double the size they were last season. I should take their average weight to be about two pounds, the trout running rather the larger of the three kinds —the salmon, salmon-trout, and trout —and sometimes being taken of six pounds weight. Of the salmon-trout there are but few. The float is most commonly used, with a depth of about six feet from the bottom hook, although I have witnessed some success without a float, when angling from either the shore or boat.

Of the two most favorite baits—the worm and the boiled shrimp—I should be inclined to recommend the last, although worms (either brown or red), when well bunched with their ends squirming about in a lively manner, are often a tempting and successful lure. The heads of the shrimp are best taken off, and also part of the body portion of the hard shell, inserting the hook (of moderate size), from the end of the tail toward the head of the shrimp, the end of the hook being concealed in the body of the crustacean, and the shank of the hook being partly concealed by its tail end alongside of it. It is true that many of these fish, when well on the feed, will hook themselves, if sufficient time be allowed them, but when they seem to be less hungry and not eager for food, I consider it better, when they bite and the float descends in the water for five or six seconds, to strike quite strongly and sharply, to drive the hook home in the jaw, in case of its touching or striking the upper, which is much harder than the lower one, or even the sides of the mouth. I am satisfied that many good fish are lost by not striking them sharply and firmly enough, after the float has dived a sufficient time for the hook to hit some part of the jaws or throat. When a boat is used, a large landing-net is a *sine qua non*, but when fishing from the bank, an exhausted fish is easily drawn ashore, and the angler can then speedily get his prize into his clutches.

In the early part of the season on this lake, bait-fishing is most successful, but later, trolling from a boat, with a moderate sized flashing gold and silver colored spoon bait, seems to succeed best. There should be two persons, one to row and the other to fish; rowing rather fast; but, on a pinch, one person can both row and fish at the same time, by having the rod placed over the stern, and by his side, or between his legs; and there is no difficulty in seeing a bite, and feeling a strong jerk of the rod by the fish when he takes hold, and it is not a very unpleasant shock to the nerves of the angler either.

In Lake San Andreas, the silvery

grilse or young salmon most abound, the brook-trout species being scarce. The salmon do not run as large as they do in Lake Merced, but probably they are rather more abundant. They both bait-fish and troll from a boat there at various times of the season; and from some parts of its rather flat loamy shores the fish have been taken with a fly. This mode is rarely successful in Lake Merced. On the contrary, at Lake Pilarcitos, which abounds in fine brook trout (*salmo irrida*), the fly (a red-bodied one) is very killing—although bait-fishing is a successful mode there, too. Both Lakes San Andreas and Pilarcitos have been leased by the Sportsmen's Club, and club-houses, boats, and other conveniences on the shores of each of these fine lakes have been provided for the delectation of the members and their friends, under the appointed conditions of the Club, similar to those of Lake Merced. Lake San Andreas is about twenty miles from the city, and Pilarcitos about thirty. From the Seventeen-mile House San Andreas is three miles, and Pilarcitos eleven or thereabouts. There are no small fish in Lake Merced for the salmon to feed on, but only water weeds and a small water louse or flea, in form and action somewhat like a shrimp; and of course some other natural worms, grubs, and insects. There are plenty of bull-heads (a kind of cat-fish), and probably some stickle-backs in these waters. In Lake San Andreas there are chubs and a few other kinds of small fish, and I believe, also, in Pilarcitos. It would be very advisable to form a rocky and gravelly bed in some creek or inlet in Lake Merced for the fish to spawn in, as, for want of it, it is thought none of the salmon tribe breed there. When additional young fish are planted, they should be of a larger size than they have hitherto been, that they may not become so easy a prey to their larger brethren. I am told no young fish were put into the lake last year or the year before. Would it not be well, likewise, to put in a parcel of chubs, as they would readily breed there, and become suitable food for the salmon and trout family.

FISHING WITH FLOAT AND BAIT.

BY PISCATOR.

In deep still rivers, lakes, or ponds, the float is an indispensable auxiliary to the bait or bottom-angler, in order to keep the bait either quite still, or by giving it a little motion at a proper distance from the bottom to prevent it lying motionless on the mud, gravel, or sand, or whatever the bottom may be. Floats are manufactured as most suitable for the above kind of fishing of cork, and of various shapes, as pear-shaped, oval, etc., proportioned in size and material to the weight of the bait to be suspended, the strength and depth of the current, and the kind of fish we are in pursuit of. In live-bait or dead-bait fishing with any small fish, or when large heavy worms or shrimps, etc., are used, or the river is deep and the current powerful, or if in tide-water the tide is strong, so as to require heavy sinkers to be appended to the line to keep the bait down, cork-floats of a pear shape and corresponding bulk must be used. On the other hand, in waters of but moderate depth and velocity, or quite still, or very gently moving or flowing, and with small baits, the slender, or narrow light floats are the best, as being less bulky and conspicuous, as a very little object, particularly if painted with glaring colors, is apt to keep at a distance such timid

fish as the salmon and trout. Here let the sportsman bear in mind that the smaller and finer the float, consistent with the depth and strength of the current and the weight to be suspended, the better will be his success; and if the water is moderately clear this is of paramount importance. The angler must likewise remember that either in comparatively still or shallow water, less lead is required to sink the bait to a proper depth than in rapid or deep streams, and that consequently a less bulky and conspicuous float will suffice, and indeed is greatly to be preferred. The first thing in float-fishing is to select a favorable part of the river, lake, or pond, such as an eddy in the return of a stream, or a piece of deep water in the neighborhood of bushes or trees where trout or salmon are known to haunt, or a deep still pool probably well stocked with fish. The next thing is to ascertain the depth at various parts of the stream by means of a leaden plummet, to be obtained at all the best fishing-tackle stores, and note the depth of each particular part of the pool upon a tablet, if the memory is not adequate to the understanding, so as to be able to shift the float according as the depth varies, without further disturbing the water. It will even be better if this operation be performed the day before it is fished, or, at all events, several hours beforehand. And here, while speaking of the shyness of game fish especially, we will call the attention of all anglers to what we believe to be a fact, that in boat-fishing the appearance and movement of the craft have the effect, more or less, of disturbing the fish, and have a tendency to keep them at some distance from it, at least till the boat is anchored, which it should be both at head and stern, until everything is quiet.

The next thing to be done after plumbing the depth is to fix the float upon the line, so that the bait may be suspended some distance (according to circumstances, and the usual custom of the water to be fished) from the bottom, or a certain distance—say six or eight feet—from the top of the water, by passing the cap or ring of the float over the hook, and then fixing it on the quill of the float so as to embrace the line firmly between them; or the float may be fixed on the line in almost any way the angler may choose, so that it is secure and immovable. Sinkers of shot, of greater or less weight, must be attached to the line eight or nine inches or a foot above the hook, according to the size of the float, and the depth and strength of the current, or no current at all; keeping in mind that they must be so regulated as just to retain the float in an upright position, with half its body above the surface of the water, without being either so light as to allow it to assume a horizontal position flat on the water, or so heavy as to draw it under the surface. The best plan is to fix a single small pellet about ten inches above the hook, so as to keep the bait down without being so conspicuous as to cause alarm, and then affix larger ones at some distance above it, sufficient to retain and properly balance the float in the right position.

The longer the rod is the better, as its tip must be held if possible nearly perpendicularly over the float; hence, the longer it is, the greater will be the extent of water under command. It may then be eighteen feet with advantage, provided it be made of cane, or some other light material, so as to be easily managed, without wearying the arms; and the line between the tip of rod and the float should not exceed six or eight feet in length, which ought to

be kept constantly nearly taut, in order to enable a fish to be struck and firmly hooked with the necessary quickness and precision. Should the fisher have an eye toward the frying-pan, as well as the sport, we should recommend him to attach another hook, with a foot and a half staging, eighteen inches above the end hook. If the latter is baited with the tail of a boiled shrimp (supposing the angler were fishing in Lake Merced or Lake San Andreas), and the second one with a small fish or a worm, etc., the fish will have a variety from which to choose, and there will be two chances for one. As in float-fishing the angler is compelled, if he has no boat, to stand so near the water as to hold the tip of his rod vertically, or as nearly as he can, over the float, it can only be successfully practiced in pretty deep or opaque water, where both the sportsman, rod, and float will be invisible to the fish at or near the bottom. A good stiff breeze to produce a roughish curl on the surface is also a material auxiliary; while in lakes or waters destitute of a current it imparts motion to the bait by its pressure on the line.

As to striking—when a fish seizes the bait, the fact is instantly announced by the float being drawn beneath the surface, when, if it is retained decidedly down, he is to be immediately struck, and either landed at once, or otherwise properly played until he succumbs. But in the case of salmon or trout, when they are only shyly on the feed, it seldom happens that they at once gorge a bait on the first attack upon it, but will very frequently merely seize it by the extremity two or three times in succession, and so suddenly relinquish their hold, before they do so, when they must not be struck until the float is decidedly retained for four or five seconds below the surface of the water.

MISSING A FISH.

The water was heavy, and no mistake, and as it dashed round the rock on which I stood, I rather hesitated whether to try that particular pool or not; for I knew by bitter experience the difficulty of following a fish, should he, as most probably he would, take down stream. However, I did the plucky, and in a few minutes my blue-bodied fly was swinging across the pool. Round it came floating on the top of the stream; so strong was the current that it would not sink. Two or three more throws, and then up came a noble fellow, half of him showing out of water as he boldly took my fly; the line tightened, and the steel struck home. A moment's pause as we both prepared for the tussle, and then off he dashed down stream. I groaned as yard after yard raced out, and I prepared to follow my friend in his reckless career. Fortunately, before I had moved, he turned and came straight back to me; fast as I reeled up, yet faster came the fish. I could not step back so as to regain the touch, and for a few agonizing moments I thought he was off; but no, I suppose the water kept the line taut, and prevented the fly coming away, as too often occurs in such a crisis; and I felt that the link that connected us still held good. Eagerly I watched the line as it slowly moved round and round the small pool, and made up my mind, if possible, to keep my antagonist within his narrow bounds. A short dash down was prevented by a little extra pressure. I dared not put on the strain too hard, for I was fishing with single gut, and that little thicker than sewing gut. I began now to have hopes of killing him, and was chuckling over the idea of sending him home

as a present to the friends I had left in the morning, and so have the laugh on my side; for of course they had made merry at my rushing off so frantically. "There's many a slip." The extra pressure had evidently riled the fish, and he made an angry dash up stream, followed by a grand leap out of the water; but he was, unfortunately, so close under my rod at the time that I could not slack sufficiently, the hold broke, and my fly came back to me. As if in derision, clear out of the water again sprang my late antagonist. Was it my fancy, or was there a wriggle of his tail, and a cock of his eye, as much as to say, "Sold again, old fellow!" But this is, at times, the experience of all anglers, and so, hard as the case was, after a while I became reconciled to my disappointment and sad mishap.

GORDON SETTERS.

Mr. Kaeding, of the sporting firm of Liddle & Kaeding, Washington Street, has sent home to his partner, from Europe, which he is now visiting, two of the above famous and much prized black-and-tan setters, a dog and bitch, Belt and Bell, the latter of which has had a fine litter of pups since her arrival. Both are good, staunch, well-broken dogs, and first-rate retrievers. This breed is the latest and most favored and fashionable of sporting dogs. The specimens at Messrs. Liddle & Kaeding's are as thoroughbred and stylish as can be found anywhere. One of this breed took the first prize at the dog show in Baltimore, in January last. The pups are by the famous Gordon setter Fritz, owned by Edward Howe, Esq., of Princeton, N. J. The editor of that first of sporting papers in this country, the *Forest and Stream*, of New York, thus speaks of this noble strain of dogs: "The true Gordon setter should be, if a dog, not less than twenty-three inches high; if a bitch, not less than twenty inches high; coat, wavy and soft, by no means curly. A curly-coated Gordon setter, although he may be a good dog, yet such a coat would detract materially from his beauty, besides indicating a cross with some other strain. He should have a straight tail; ears should be long, reaching to the end of the hair at the nose. Deep black and rich tan is the most approved color, but we have seen some very beautiful tri-colored dogs—black, tan, and white—which we knew were thoroughbred Gordons, and is a color we very much admire, as such are more easy to be seen while working in cover." Two of the pups of the above named bitch at Messrs. Liddle & Kaeding's vary a little from the rest of the litter, one being all tan, and the other a mixture of white and black and tan.

RIFLE SHOOTING.

A military rifle-shooting match took place at San Bruno, between the National Guard and the San Francisco Fusileers, 20 men of each company being selected to fire 7 scoring and 2 sighting shots at the 200-yards target, under the usual conditions. It resulted in a victory for the Nationals by a score of 561 to 509. The Nationals made a fraction over 80 per cent., and the Fusileers made almost 73 per cent. The highest score made on the side of the Nationals was by Jeff. Pascoe, 31 out of a possible 35, and F. Hageman, of the Fusileers, made the same figure.

The following is the record of shooting of the first class of the National Guard for the company medal: Distances, 200 and 500 yards; possible grand total, 70; Charles Nash, 59; L. P. Peck,

56; Charles A. Dunn, 56; Frank Walton, 55; E. N. Snook, 53; H. F. Muller, 53; S. N. Morris, 53; A. H. Hentz, 52; P. H. McElhinny, 50; Charles Burgans, 50; J. E. Klein, 50.

The Sumners had target practice, to establish the status of their applicants for admission to the regimental team to contend for the Rifle Association's medal on the 8th and 9th of June. Carson made 170 points in 40 shots, at 200 yards, the highest number yet reached by any marksman shooting that number of shots consecutively.

SALMON AND TROUT FISHING.

Here is a little information for the disciples of Izak Walton, and advice as to where to go at this time for the finest fishing streams and lakes in this State. Take the morning train from here to Redding, stay at the hotel over night, take stage at 6 o'clock in the morning, and you are landed at U. S. Fisheries at 9½ o'clock in the morning. Good accommodations can be had at Myron Green's house at the rate of two dollars per day. Fish are now biting splendidly, and are to be caught in large quantities. The varieties are the splendid Dolly Varden and red-sided trout; also, salmon in abundance. They take readily to the spoon baits, which can be had of Liddle & Kaeding, 538 Washington Street, who has just received from England an immense stock of spoons and artificial baits in endless variety.

In seven or eight years' time from the seed, Eucalyptus trees would grow to a sufficient size to yield a good per cent. on the money invested in the land and cost of cultivation, and this without considering its hygienic properties in miasmatic districts.

Editorial Portfolio.

OUR FRONTISPIECE.

We both value and admire California so highly that we like to illustrate her splendid scenery and industries. This induces us to give this month, as our frontispiece, River-bed Mining. Our picture, besides displaying a grand bit of a mountainous view, presents river-mining for gold in the bed of a river, below low-water mark. Mr. Hittell, of the *Alta*, once a miner, thus speaks of river-mining in his Resources of California: "The only practicable method of doing this is by damming the stream, and taking the water out of its bed in a ditch or flume. The flume, the ditch, and the wing-dam are the chief tasks of the river miner. The ditch is rarely used, because the banks of the mining-streams are usually so steep, high, rocky, and crooked, that a flume is cheaper. The wing-dam is not often used, because the river-beds are in most places too narrow. The flume, as in the engraving, is almost universally employed. This can be done only during the summer and fall, while the water is low, and while the miner can have confidence that it will not rise. River-mining has many disadvantages, as compared with other branches of mining. Work can not be done usually more than half of the year, and expensive dams and flumes have to be erected. These disadvantages, and the exhaustion of most of the river diggings in the State, have almost put an end to it. A river is seldom flumed for less than 300 yards, and sometimes for a mile. This kind of mining is now never undertaken by an individual, but always by large associations, generally called 'fluming companies,' sometimes composed of miners exclusively,

sometimes of miners and all the principal business men living near the place where the work is to be done."

A VISIT TO OAKLAND.

In a late trip to this charming suburb of our great and rapidly advancing metropolis, we called at Mr. Harmon's beautiful residence, conservatories, and gardens, on Lake Merritt, and two blocks from Telegraph Avenue. The delightful and flourishing condition of these attractive grounds is very much due to the arrangements, management, and taste of Mr. Richard Turnbull, the intelligent gardener employed by the enterprising and enthusiastic proprietor. Mr. Turnbull is not contented in walking, however ably and effectively, in the more common track of horticultural routine and practice, but seems much inclined to enter into new and interesting fields of experiment in his fascinating profession. Not satisfied with confining many plants, which are considered by general cultivators to be chiefly suited to the greenhouse, he is experimenting with them outside or in open air culture. Some of these are the Ixoras, Ericas or Heaths, and Azaleas. For success in this regard the principal requirements he considers are plenty of sun, water, and air. He also states that he has good reason to believe that all the varieties of the Cannas, such as *C. tricolor* and *C. discolor*, and which bear handsome flowers as well as very large and showy leaves, can be made excellent and healthy objects for outside planting and decoration. We observe that Mr. Turnbull, since we visited him last year, has obtained a plant—the *Forsythia viridissima*—which we recommended to his notice, as making a handsome display of bright yellow flowers all along its branches, and at first without showing any leaves, early in the spring.

We observed in a warm frame a variegated-leaved plant — the *Sonerila Margaritacea alba*—a rare and desirable stove plant, which, owing to some difficulty in its transportation, has never been exhibited here before. Its leaves are of the darkest green, and are plentifully filled with snow-white spots. It is well adapted for hanging baskets, and grows with great luxuriance, making a most effective display. In the conservatory we noticed a fine plant of the Passion-flower (*Passiflora sanguinolenta*), which makes a splendid show of its flaming red blossoms.

The Gymnogrammas are great favorites with Mr. Turnbull, but are not much adapted for outside culture. We observed a fine plant of *G. laucheana*, the best Fern in cultivation, and highly esteemed for decorative purposes; its fronds furnished with abundance of bright yellow powder, and curving or arching in the most graceful manner.

On the south side of these charming premises, and forming a screen to the kitchen or vegetable garden, is a fine shrubbery of some rare and lovely trees and plants, among which we observed a thorn (*Cratœgus*) with fine rose-colored double flowers.

A FEW HORTICULTURAL ITEMS FROM THE CENTENNIAL EXHIBITION.

The correspondent we deputized to represent the Horticulturist at the Philadelphia Centennial Exhibition writes us privately as follows, hoping to send us a full description at a later period. The letter is dated May 29th. She says: "I mustered up the courage to-day to present my credentials for a pass. I was very politely received by the gentleman in attendance, Mr. Flan-

agan, who besides my pass gave me a letter of introduction to the club called the Ladies of '76, who have a room in the House of Public Comfort. He mentioned several other California places he wished me to be introduced to, and I will soon visit the Exhibition in earnest, and systematically. Two 'press' gentlemen before me merely handed their cards as editors, but were promptly refused. They must have the papers properly made out, and presented personally. Mine is all ready for the official stamp around the photograph, which will be put on when I go in again. The most wonderful, and worth double the admission fee, is a canvas pavilion, a quarter of a square [and Philadelphia blocks or squares are larger than ours] in length, devoted to different kinds of blooming Rhododendrons from Surrey, England. There are more than a thousand plants—all in perfect bloom, and of all colors, from the darkest to the most delicate tints. The bunch of blooms is the size of a large cocoanut. They were closely packed in boxes, and when they arrived here the buds were as large as peas. A full sized bud is as large as a fist. The Horticultural Hall appears to be small, and all the plants are crowded. We had a splendid view of the grounds from its roof; they will be perfect in a few months, when the seedlings first planted will have their full growth. They are now taking up the bulbs. The grounds looked gorgeous, with their beds of Tulips, Crocuses, and Hyacinths of all colors in full bloom. Some of the rooms in the Art Gallery are filled with unpacked cases. It will be a month before it can be put in order."

Some authors are now disputing the virtues of warm water for house plants.

NEW FRUITS.

Oregon Champion Gooseberry.—This is a cross between the Crown Bob (English) and Houghton Seedling (American) varieties. The fruit from which the seed was obtained grew and intermingled on the grounds of Dr. P. Prettyman, Multnomah County, Oregon, in the year 1869. This new variety was selected from about 500 seedlings, when they came into bearing at the age of five years. It ripens early; is entirely free from mildew; is a thrifty grower, and a most prolific bearer. Mr. H. W. Prettyman, of the Railroad Nurseries, writes: "I have gathered from a single plant of this variety, four years old, three and a half gallons of berries at one gathering. The fruit is but two-thirds as large as the Crown Bob, is of a pale whitish color, and is perfectly transparent when ripe.

Lawton Peach. — This Peach was raised by Mr. C. W. Lawton, of Seattle, in Washington Territory. The fruit is very large and handsome, ripens early, is of excellent quality, and promises to be a great acquisition to our fruit collections. Was raised from seed imported from England.

NEW CHERRIES.

Major Francis. — Originated by the Messrs. B. Walling & Son, Willamette Nursery, Oregon. Fruit very large, black, rich flavor, fine; ripens just before the Black Tartarian; one of the best Cherries in their time; tree vigorous and productive. Took the first premium two years in succession over all the other Cherries.

Willamette.—A seedling from the Royal Ann (Napoleon Bigarreau); fruit very large, light red color; sweet; late. A good market variety.

LEWELLING.—Raised by Mr. Seth Lewelling, Milwaukee, Oregon. Ripens with or a little after the Napoleon Bigarreau; fruit very large, shining black; flesh very solid and firm; fine; a good keeper, and will bear transportation a long distance. Tree a stout, vigorous grower; comes into bearing early; a profitable market variety.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

In our last report on fruit cultivation and the market we referred to the successful cultivation of the English Gooseberry free from mildew, by a cultivator in Napa Valley. Some of the reasons were given for this unusual success with that fruit. Thomas Meehan, of Philadelphia, an eminent horticulturist, at the session at Chicago in 1875 of the American Pomological Society, in a talk upon fungi and fruit diseases, speaking of the Gooseberry mildew, states that "this attacked certainly healthy trees, though, like the leaf blight on seedling Pears, it never was troublesome except where the soil was heated to a higher temperature than 75°. If cornstalks, stones, or even old boots and shoes, as I have seen, are piled up under a Gooseberry bush, so as to keep the soil cool, it will never mildew." We are ready to admit that this coolness of the soil may be one of the causes of prevention of this devastating evil, but this is by no means the only one. We regard the great depth and friability of the soil, its natural adaptation to the fruit, and its strength from plentiful animal and vegetable manuring, which principles were energetically carried out by the proprietor spoken of in Napa Valley, as the main reasons of the mildew being fought off there; but the temperature also had, probably, a good deal to do with it, and although the soil in the rather warm valley of Napa, to the depth of one or two feet, in summer is over 75 degrees, still below that depth it is not likely that it is over that amount, and the cultivation by subsoiling and trenching was at least four feet on the place referred to. So much as regards the triumph in this instance in warding off this terrible mildew nuisance. Let it, however, be here understood that the Houghton variety, a native American seedling, and all the improved kinds derived from or similar to it, is seldom, if ever, affected by this sad pest to this useful and pleasant fruit.

In the culture of orchards it has now been discovered with absolute certainty by the most experienced pomologists, that the roots of trees in many cases have been found to extend to a much greater distance than the entire height of the trees. In consequence of this fact it is desirable to plow over, though not too deeply, the whole surface of the ground of the orchard. But little advantage can result from the common practice of spading circles about fruit-trees which stand in grass—unless the circles are very large, and for the first year or two after transplanting, while the roots are comparatively short. Broad cast culture and broad cast manuring should be given to the whole surface of the orchard, unless, to save labor, small portions of grass are left at the foot of the trunk in horse cultivation. When the subsoil is hard and poor, and nearly all the fertility of the land lies within a few inches of the top, it becomes more important to cultivate shallow. But if the soil be deep and rich the cultivation may be much deeper. When the roots of trees are near the surface, top dressing with manure

is more essential than when the roots run two or three feet under the top of the ground. Using manure has comparatively little effect on trees when old. When trees are very thrifty and make rank growth, it is well to seed the land in some kind of grass—say Alfalfa; but if they are feeble in growth, vigor must be imparted by cultivation or manuring, or both. In the fresh and generally strong soil of California, backed by a favorable climate and temperature all the year round, top dressing at present is not much needed. Plowing once and harrowing several times will not cost here so much as a plentiful top dressing, which, to do any considerable good, is necessary. No grass should be allowed to grow with young or newly set fruit trees. All plants when crowded are checked in vigor. Cultivation of fruit should, of course, vary with the condition of the soil and locality. Cultivation should be performed early in the spring, and not after the trees are in leaf, unless the soil is very rich and deep.

About the 10th of last month (May), there was a grand succession of fine Strawberries in market, it being near the height of the season for them, and their price became, consequently, quite moderate—about 10 to 15 cts. per box, or "pottle," as they call a certain similar receptacle for them in England, when retailed to the public. Strawberries are plentiful, and of good size and color this spring. Great quantities of them are seen in all the fruit stores, and are sold in the streets. The arrivals about the middle of May were very abundant and free, a very fair article being obtained at 12 to 15 cts. per lb. Some very fine fruit of the British Queen variety, a sort much larger than the Longworth Prolific, sold at 20 and 25 cts. Finer kinds of Cherries were coming forward, and the outside quotation advanced to $1 per lb. Apples were scarce at $2 50 to $4 per box. A further decline took place in all kinds of vegetables. Old Potatoes were cheaper, and the best could be had by the single sack at $1 50 to $1 75 per 100 lbs., delivered. New Potatoes were scarce and firm at 4 to 5 cts. per lb.

About the middle of last month (May) Apricots came into market for the first time this season, and to add to the varieties of fruit already in. They came from Solano County, and were sold at 50 cts. per lb. They are much improved in ripeness and flavor by being placed in a drawer or closet for two or three days. It mellows them very nicely. Strawberries were in great plenty, and with Cherries and green Gooseberries became cheaper. Cherries were becoming plentiful, and were sold at lower rates than is usual at this early period of the season. In some locations, owing to frost, there had been short crops of them. By the box of 4 lbs. Strawberries retailed at 35 to 50c. It should be generally understood that nearly all fruits in unbroken packages can be had considerably below the rates given in the retail market report or table published on May 19th. We have never seen Cherries packed so handsomely, closely, and regularly in any other of the State's markets as in San Francisco, and they are without the least blemish from insects or any kind of rot. The Black Tartarian and Governor Wood are at present the largest and most showy. Apples were scarce at $2 50 to $4 per box.

At the vegetable stalls a further reduction in nearly all varieties of vegetables took place. New Potatoes were more plentiful, and old were rapidly being displaced by them. The first

new Early Rose arrived about the 19th of May from the Sacramento River, and retailed at 5c. per lb. The best old Potatoes sold by the single sack, delivered, at $1 75 per 100 lbs.

Toward the end of May the market stalls and stores in this city, in addition to the abundance of Strawberries, began to make a good display of ripe and unripe Currants and Gooseberries, with some Raspberries. Currants retailed at 25c., and Gooseberries at 60c. per lb. The large English Gooseberries from Napa Valley will be ripe about the first or second week of this month (June). These are very rare, as they are seldom cultivated on account of the difficulty of preventing the mildew from settling on the fruit. Mr. Sandercock, however, of Napa Valley, about four miles from Napa City, succeeds in raising them free of this great pest to that kind of fruit. The native American kinds seldom have it.

The display at the vegetable stalls increased at the end of last month (May) by the addition of Green Corn and Tomatoes. The quantities received were, however, small, and prices were correspondingly high. New Potatoes were more plentiful, and by the single sack were obtainable at $2 50 to $3 50 per 100 lbs.

At the beginning of this month (June) a few Green Pears and Apples arrived, and one shipment of early Peaches, but the supply will not be at all liberal unthe middle of the month. Currants were very abundant, and by the drawer were obtainable at 5 to 8c. per lb. A few Blackberries were offered at 75c., and Cherry Plums at 50c. per lb.

Vegetables were generally cheaper under more liberal arrivals. Old Potatoes were neglected, and retailed by the single sack at $1.25 to $1.50. New were in demand at $2 to $3 per 100 lbs.

Editorial Gleanings.

Transplanting.—There are few rural people that do not know the importance of cherishing every fibrous root during the operation of transplanting —but we have seen them—not unfrequently either — act as if they knew nothing about it. Bundles of trees and shrubs are received from the nurseries, the bagging and straw torn off, and the roots exposed to air and sun until the last is planted — in which case "the last shall 'not' be first" only to die. Evaporation goes on in a greatly increasing ratio with the violence of the wind—a great deal of heat is thus rendered latent, and cold is produced upon the evaporating surface. Hence *ether* produces cold in the hand by its quick evaporation. Hence, in order to hasten evaporation, we "blow" our tea and coffee—at least those of us who are lawless enough to do so. A high wind, with the thermometer 10 above, seems colder than a still air with 10 below zero. The atmosphere of warmth that radiates from all bodies is every instant dissipated by wind, and its place is every instant filled with fresh, cold air. Hence it is that water perfectly quiet has been cooled to 15 without solidifying — while if agitated it freezes at once, and the thermometer will register 32. And thus it is that the fibres of roots—the minute, growing points—most serviceable in absorption, when exposed to sun and wind, are dried to death in a few moments, and the functions of the plant crippled accordingly. Many catalogues recommend in their "Hints to Planters" to shake a tree up and down while setting it—a very simple and efficacious method of destroying these tender threads. The earth presses hard upon them, and a sudden jerk upward must wound and

break, while the downward movement must still further bend and entangle them. If necessary to transplant during windy or sunny days, protect the roots every moment, and keep them moist without an interval until the last one is planted.—*Rural New Yorker.*

The New Paper Stock.—Okra, a species of mallow from two to six feet high, which grows profusely at the South, and has heretofore served chiefly to thicken soup with its pods, is on the verge of promotion to higher uses. It has been talked of for paper stock for these twenty-five years, and has in fact been successfully used for paper at various times since 1860, being one of the comparatively few discoveries made at the South. The first suggestion, that the outer fibre of the plant could be used was made by a French officer in Algeria, but it was of no practical value, this fibre bearing too small a proportion to the whole plant to make it pay. Dr. Read, of Richmond, Virginia, first discovered the adaption of the whole plant to paper-making, and patented his discovery, eleven years ago; since then several northern mills have tried it, and a Mobile mill makes a good enough paper to use for newspapers, so that the Mobile *Register* printed an edition on it. The only reason that the manufacture has not been prosecuted is the lack of material, and it is yet to be introduced to any extent, even in the South. It would make a profitable field crop, and will grow in any part of the Union. It requires a pressure in bleach-boiling stronger than is necessary for any stock now used, in order to have the paper white, and boilers would have to be constructed with reference to this. The paper is remarkably tough, and in this respect better than almost any other now used for newspapers.

The Natural Age of Fruit Trees.—It seems to be the common belief that there is no limit to the natural age of Apple-trees. But this is certainly a mistake. We all know that the Peach-tree fails to be profitable at twelve to fifteen years of age, and the Cherry and the Plum average only twenty to thirty years; the Pear, in favorable circumstances, forty to fifty years—in rare cases a much longer time. So, also, the Apple-tree has its natural limit, and, although, like man's life, the duration of the period of health and vigor varies greatly according to constitution, nurture, climate, etc., its approaching termination is clearly indicated by signs of debility and disease. On very deep and favorable soils, and where trees are not damaged by the severity of climate, Apple orchards are found bearing fair crops of fruit at 70 to 100 years of age, but these are nearly as rare as for their owners to live so long. Very few farms have soil of the best kind for an orchard, and everywhere our climate is either too warm, or at times too cold, for the health of the trees. Injury by severe cold, blackening all the wood, except as new growth is formed, I am convinced is a very common cause of the failure of orchards; but starvation, in consequence of exhaustion of the soil, is still more common, and this is a more difficult matter to remedy than most people suppose, especially when trees have attained full bearing size.

Trees and Rain.—The bulletin of the Torrey Botanical Club contains a suggestive paragraph in reference to the influence of trees upon rain and atmospheric moisture, as shown by the experience of the island of Santa Cruz, in the West Indies. This island is said to have been a garden of freshness, beau-

ty and fertility twenty years ago; it was covered with woods, trees were everywhere abundant, and rains were profuse and frequent. The recent visit of a gentleman who had known the island in its palmier days revealed a lamentable change, one-fourth of the island have become an utter desert. The forests and trees had been cut away, rainfalls had ceased, and the process of desiccation, beginning at one end of the island, had advanced gradually and irresistibly upon the land, until for seven miles it had become as dry and barren as the seashore. Houses and plantations had been abandoned, and the advance of desolation was watched by the people, wholly unable to prevent it, but knowing almost to a certainty the time when their own habitations, their gardens and fresh fields would be a part of the waste. Indeed, the whole island seemed doomed to become a desert. This sad result is owing entirely, according to the belief of the inhabitants, to the destruction of the trees upon the island some years ago.

Lopping away Large Limbs. — It is well to improve the fruit of our orchards by grafting, but too often is the tree destroyed thereby. A healthy tree, ten to twenty years old, the usual character of trees grafted, standing on good soil, is valuable property, and therefore the laws of life that govern trees should be well mastered by the grafter. A tree may be hurled to destruction in a half hour or even less; but twelve to twenty-five years may be required to grow its like again, and that with much care and expense. The main cause in killing trees by grafting, is in cutting away too much wood at a time. When a tree is thus robbed too much of its wood, it loses its power to draw the sap of the whole roots, and so its functions of life are impaired, and soon death may set in. Large limbs can not be cut from the tree without severely hurting it. Do not, then, commit an onslaught on your trees by a wholesale cutting with the grafting saw. Better consume two or three years to change the fruit of your trees than to lose it entirely, or lose its usefulness. Graft small limbs. It is better to put in more grafts than to cut a large limb. Cutting should be seldom done where the limb is over two inches thick.

Seeds Germinating in Ice. — Having observed that seeds of *Acer planatoides* and *Triticum*, which happened to have come into an ice cellar with some blocks of ice, had germinated between these, M. Uloth was led to experiment on the subject. He placed seeds of various species in grooves made in ice blocks (inclosed in cases), over which he laid plates of ice, and kept the whole in an ice cellar. Other similar seeds were sown in earth surrounded by ice. The cases were placed in January, and observed in March and May. A number of seeds germinated, and those of *cruciferæ* and *gramineæ* seemed to do so with special facility. Those in ice and those in earth seemed to germinate pretty equally. The roots penetrated into the ice (in the former case) and an interesting question arose as to how this occurred. M. Uloth considers that the process was facilitated by the heat liberated in growth of the root, melting the ice. M. Sachs thinks that the ice (in the original case, which suggests these experiments), being surrounded by warmer bodies, these may have heated the roots by radiation; but M. Uloth points out that in his experiments the ice was too thick for this, and if such a cause had operated, other bodies frozen in the ice, such as straw

and wood chips, would have got heated and sunk in the ice, which was not the case.—*Boston Journal of Chemistry.*

A Murderous Sea Flower.—One of the exquisite wonders of the sea is called the Opelet, and is about as large as the German Aster, looking indeed very much like one. Imagine a very large double Aster, with ever so many long petals of a light green, glossy as satin, and each one tipped with rose color. These lovely petals do not lie quietly in their places, like those of the Aster in your garden, but wave about in the water, while the Opelet generally clings to a rock. How innocent and lovely it looks on its rocky bed! Who would suppose that it could eat anything grosser than dew or sunlight? But those beautiful, waving arms, as you call them, have another use besides looking pretty. They have to provide food for a large, open mouth, which is hidden deep down among them—so well hidden that one can scarcely find it. Well do they perform their duty, for the instant a foolish little fish touches one of the rosy tips, he is struck with poison, as fatal as lightning. He immediately becomes numb, and in a moment stops struggling, and then the other beautiful arms wrap themselves around him, and he is drawn into the huge, greedy mouth, and is seen no more. Then the lovely arms unclose and wave again in the water, looking as innocent and harmless as though they had never touched a fish.

To Start Cuttings. — Cuttings of a great many plants can be readily started in water; and, in the early spring, if you have not a green-house or hot-bed, it is the safest plan. Fill small bottles or vials with warmish water, remove the lower leaves of the cuttings and put them in the water; hang up the vial to the window sash, tying a string about the mouth for this purpose. If cotton wool is put around the mouth of the vial, it will prevent the evaporation of the water and make the roots sprout more quickly by keeping up a more even temperature. Oleanders can be rooted in this manner; also Heliotropes, Verbenas, Fuchsias, Roses, and all kinds of bedding-out plants. The process is so simple that a child can succeed with it. As soon as the roots are an inch long, the cuttings should be transplanted, taking care to spread out the tiny rootlets as they grew in the water. Some fill up the bottle with rich earth, let it dry off for two or three days and then break the glass, and pot or plant out the cutting without disturbing its roots in the least degree. This is the most certain way of obtaining plants from cuttings.

Give Your Flowers Plenty of Room. A lady correspondent of the *Country Gentleman*, speaking of her flower garden, warns those who are starting one against "too great an economy of space." She writes: "I once fancied it a great waste of ground to sow Aster seeds an inch apart, as a friend said I ought, but thought five or six seeds to the inch better; the flowers can be imagined! I learned by experience, however, that twelve inches were better than one!" In transplanting, always select brilliant colored flowers, as Verbena, Phlox Drummondii, Petunias, Portulacca and other low growing bedding plants, for effect on the lawn or the borders; and where you have a chance for massing more in the background, French Marigold, Zinnia, Dahlia, Gladiolus, etc., may be used. If you want to cover a fence or trellis,

Morning Glory, Madeira Vine, or some other strong growing vine will give satisfaction, while the more delicate and airy Cypress Vine is always beautifully trained to a sharp cone made of two circles fastened to the top and bottom of a rod and interlaced with twine.

A Gigantic Flower.—The new Aroid, *Amorphophallus Rivieri*, bears what an unscientific observer of nature would term a flower, measuring two feet ten inches long by a foot broad. But scientifically speaking, this gigantic production is not a true flower any more than the white spathe of the common Calla Lily is its flower, although generally referred to as such. The flowers of such plants are quite minute and situated on the spadix or central organ, while the outer and more showy parts are little more than a leaf-like envelope to which botanists have given the name of spathe. The *Amorphophallus* referred to above is a giant among the pigmies in this family; but we must say it is more curious than beautiful. The fetid odor emitted from the opening spathe is simply intolerable, resembling that given off from putrid animal matter. The plant dies after it blooms, and is produced from small offsets of the old bulb, during previous years. This new Aroid is a handsome bedding plant, with a large, showy, divided leaf; but when the bulbs reach a blooming size they may be cast aside unless one is curious to see what a repulsive monstrosity nature can produce in the way of a flower.

Disease of Oranges and Lemons South.—There is an excitement in the southern part of the State on account of the appearance of a disease that has seriously injured many Orange and Lemon orchards, and has also attacked several other kinds of valuable trees. The supposition that the harm was done by an insect has not been confirmed so far. Mr. C. M. Kinne, Secretary of the Microscopical Society, found that the bug regarded as the cause of the evil is an acarus which has no organs fitted for boring into healthy wood or bark, and is a scavenger that clears away material previously diseased. The cause of and remedy for the disease are still to be found. The happy days when no troublesome insects or diseases were known to the grain and fruit trees of California have past. We have now the weevil in Wheat, an acarus in Barley, the Peach-tree worm on our Peach-trees, the scale bug on our Orange-trees, the root pest in Orange, Lemon, and Olive orchards, and the mildew and phylloxera in our vineyards. The curculio and the Apple worm are happily still strangers to us.

Centennial Trees.—It is late to talk about Centennial tree planting; but as it will be in order all the year, we shall have fall planting as well as spring, and any advice that comes too late now may do for next autumn. There are two ways to find out the longest lived trees; one way is to follow the precedent of the man who bought a raven, to prove by experiment the truth of the assertion that it would live a hundred years. The other is, to ascertain the oldest trees that have been felled by counting the rings, and thus generalizing. Dr. Warder writes us, that Black Walnut, for good logs, grow 150 to 200 years. White Oak and Burr Oak get to be 200 to 300 years. The Tulip-tree of India, 300 to 400 years. But for a tree that will last you through, and not die on your hands of old age, take the Southern Cypress, which gets to be

a thousand years or so old. Unlike ourselves, Dr. Warder says, plant any and every sort for Centennial trees. "Be aye sticking in a tree." But for ourselves we want to plant this year trees that we can feel sure we shall see in 1976.

Vegetable Ivory.—The demand for the Ivory nut has so increased in the German market that its price has nearly doubled within a short time. The nut is the fruit of one of the most beautiful of all the palms. The tree (*Prytelephas Macrocarpa*) is a native of South America, particularly of the Andean plains of Peru, and of the shores of the river Magdalena. The stem of the tree is short, and lies prostrate on the ground; but from its crown arises a tuft of light green, pinnated leaves, of magnificent size and beauty. They are described as resembling immense ostrich plumes, rising to the stately height of thirty or forty feet. The fruit, which is as large as a cocoanut, consists of an aggregation of leathery drupes, each containing four triangular nuts, nearly as large as a hen's egg. The kernels of these nuts, when ripe, so completely simulate ivory in color and consistency that they have been adapted to many uses formerly monopolized by the animal product. Many articles manufactured from the Ivory nut so resemble those made of true ivory as to deceive the best judges.

Ashes and lime do not react upon each other to form an insoluble compound, when applied to the land, nor is any injurious compound of any kind liable to be produced. Lime applied to soil consisting mostly of oyster shells could not do much good, unless the soil contained also a considerable proportion of organic matter as essential to the constitution of a good healthy soil, and if there is already in the beginning less than this proportion, the addition of lime will reduce it and do no harm. Liming without manuring will impoverish any soil, sooner or later; the sooner, the smaller the quantity of plant food that there is in it to start with. On a very sandy soil lime is said to be able to form a sort of mortar with the sand. In one or both of these considerations it seems possible to find a good reason why you should think lime is working very unfavorably on your very sandy soil.

To Preserve Strawberries Whole.—To every pound of Strawberries take three-quarters of a pound of sugar. Put the Strawberries into a large platter and put half of the sugar over them, letting them stand over night. Next morning drain off the juice from the platter, add to it one quart of Currant juice, and the remainder of the sugar. Boil and skim this until no refuse scum rises, then drop in the Strawberries (only enough at one time to cover the surface of the preserving kettle), and let them simmer for about eight minutes. Skim them out into jars, and scald the rest of the berries in the same way. Then boil up the syrup and pour it over the berries. The tart flavor of the Currant juice is a great improvement to the preserved Strawberries.—*Springfield Republican.*

Bee Destroyers.—A correspondent, writing from San Diego, says that the apiarists in that section are annoyed by common ants of various sizes. The skunks, very numerous in that section, are also troublesome, and their mode of attack is somewhat peculiar. They are very fond of bees, and approaching the

hive, they tap on it, and when the bees come out they immediately swarm over the animal, and when a number of them have lodged in the hair the skunk decamps, and when a safe distance away it rolls over and over on the ground till the bees are killed, when the animal proceeds to dine off the dainty dish. The best guard against ants, which are more to be feared than any other enemy, is to place the hive on a raised table, the legs of which are to be set in cans filled with water. If the water in the cans is not allowed to fill up with sticks, so that the ants can walk over, this will stop their inroads.

A WELL-GROWN evergreen tree gives off warmth and moisture continually that reach a distance of its area in height, and when tree planters advocate shelter belts surrounding a tract of orchards of fifty or more acres, when the influence of such belts can only reach a distance of the height of the trees in them, they do that which will prove of little value. To ameliorate climate, and help the germ-bud of fruit in the spring, all orchards should have evergreen trees planted in and among the apple trees, at a distance of not more than one hundred and fifty feet apart. Such a course pursued will give health to the trees, and be productive of more uniform crop of fruit.

GROWING CHESTNUT-TREES. — If you want to grow Chestnut-trees, the fruit must be planted as soon as it is perfectly ripe and while it is in its fresh state. If a few trees only are wanted, plant the Chestnut about three inches deep, just where it is desired to have the tree stand permanently. They do better not to be transplanted, and sometimes will not grow. When they reach a proper height the stems can be grafted with any better sorts attainable. But it requires a careful hand to graft the Chestnut to insure its growth. When fairly started, the young tree pushes ahead rapidly, and often takes one by surprise in the earliness of its bearing.

SOOT TEA FOR ROSES.—Get some soot from a chimney or stove where wood is used for fuel, put it in an old pitcher, and pour hot water upon it. When cool use it to water your plants every few days. When it is all used fill up the pitcher again with hot water. The effect upon plants, especially upon Roses that have almost hopelessly deteriorated, is wonderful in producing a rapid growth of thrifty shoots, with large thick leaves, and a great number of richly-tinted Roses. Never despair of a decayed Rose-bush until this has been tried.

METEOROLOGICAL RECORD,

FOR THE MONTH ENDING MAY 31, 1876.

(Prepared for THE HORTICULTURIST by THOS. TENNENT, Mathematical Instrument and Chronometer-maker, No. 18 Market Street.)

BAROMETER.

Mean height at 9 A. M.	30.11 in.
do 12 M.	30.11
do 3 P. M.	30.10
do 6 P. M.	30.09
Highest point on the 1st at 9 A. M. and 12 M.	30.22
Lowest point on the 31st at 6 P. M.	29.93

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	60°
do 12 M.	66°
do 3 P. M.	65°
do 6 P. M.	60°
Highest point on the 7th at 3 P. M.	86°
Lowest point on the 19th at 6 P. M.	52°

SELF-REGISTERING THERMOMETER.

Mean height during the night	46°
Highest point at sunrise on the 8th	52°
Lowest point at sunrise on the 16th	41°

WINDS.

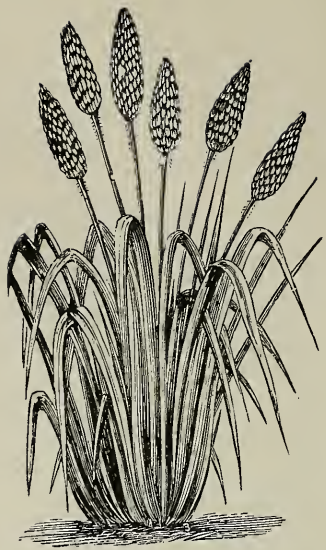
North and north-west on 3 days; south-west on 5 days; east and north-east on 5 days; west on 18 days.

WEATHER.

Clear all day 21 days; cloudy all day 3 days; variable on 7 days; rain on 1 day.

RAIN GAUGE.	Inches.
19th	0.18
Total	0.18
Previously reported	25.81
Total for the season	25.99

GLADIOLUS.



TRITOMA UVARIA.

TOMATOES.

THE

California Horticulturist

AND FLORAL MAGAZINE.

Vol. VI. SAN FRANCISCO, JULY, 1876. No. 7.

THE STUDY OF NATURAL HISTORY.

BY A LOVER OF NATURE.

The now steady diffusion of taste for the study of natural history in this country is extremely gratifying. It is this study which teaches us to look up from nature to the great Author of it. Nature is infinitely diversified, and yet each production makes its appearance at the time and under the circumstances which we should be led to expect. A plan so perfect and harmonious, of which the parts are so varied, and yet so mutually promote the existence of each other—which blend the sea, the land, and the air into one whole, and, though always perishing, are always reproduced—offers a field of contemplation which the longest life and the most active mind can not begin to exhaust; and it has the advantage over every other subject of study—it presents or awakens none of those inferior passions and imperfections that present themselves when man and his works are the objects of our inquiry.

It has these farther advantages, that the study, instead of a labor, is a constant delight; that the details are quite as interesting as the whole; that the subjects which are too small to be seen by the naked eye are just as perfect in all their parts, and as wonderful in the use of them, as those which are of the most huge dimensions. The little green moss that is as a pin's point upon a wall or the bark of a tree, or the fungus that makes a barely visible speck upon a leaf, is as perfect in its structure, and as full of life as the Oak or the Pine that rises majestically over the forest, and exhibits itself to an entire country, or as a landmark for the seaman. The aphis, which scarcely crumples the Rose-leaf, or the animalculæ, of which myriads do not render a drop of water turbid, are as equally complete, and in some respects much more curious than the whale, the horse, or the elephant. Of the aphis, nine distinct generations, all females, succeed each other every summer, and yet each produces a numerous progeny; and some of the animalculæ increase in number by a spontaneous division of the little bodies of those previously existing.

In order to understand the subject, we must, indeed, study the small as well as the great, the common as well as the rare. Nature is certainly seen

as wonderfully attentive to the welfare of her minutest works as to her greatest; and this leads us to the comforting certainty and knowledge that we, as human creatures, are regarded and have beneficent laws to take care of us (and which are to our interest to follow), as the grandest worlds and their inhabitants, if any, which comprise the universe. The most uncommon and majestic animals can not tell us more than the worm we accidentally trample under foot, or the caterpillar which we destroy as a nuisance and destroyer to our fruit and shade-trees. Nor does the utility diminish with the size. Silk, the finest material with which we clothe ourselves; carmine, the most brilliant color which we can use in painting; and the very ink with which we write, are all the productions of little insects.

In contemplating the structure of any plant or animal, however common, and however on that account overlooked or disregarded, we may find finer applications of mechanical art, and nicer processes in chemistry, than the collected art of which the whole human race can boast. That the vegetable principle in an acorn should be chemist enough to fabricate Oak timber, and bark, and leaves, and new acorns; and mechanic enough to rear the tree in the air against the natural tendency of gravitation, and in spite of the violence of the winds, and do all this by means of a small portion of matter that can be kept for a considerable time as if it were dead, is truly astonishing. It is equally demonstrative of power and wisdom in Him or Nature which gave the impulse, that out of the same soil and the same atmosphere, each plant should elaborate that which properly belongs to it; that the flower of one plant should be crimson, that of the next yellow; that one should delight us with its perfume, and the very next offend us with its fetor; or that food, medicine, or a poison should be found the closest neighbors.

In the single department of botany, we have thus not only a fund of the most curious and interesting information, but of information which is practically useful at every step. Even from the mere form of vegetables, we have some of the choicest of our ornaments, and have taken some of the most useful hints in our architecture. The engineers who first succeeded in fixing upon dangerous rocks the many light-houses that resist the violence of raging and stormy seas, have molded most of their contours from the shape of the boles of trees which have withstood the tempests of ages, and the models have been found so admirably adapted to the purpose, that they have been copied in many similar cases throughout the world.

The sure way to become naturalists, in the most pleasing sense of the term, is to closely observe the habits of the plants, animals, and insects, etc., we see around us, not so much with a view of finding out what is new or uncommon, as of becoming well acquainted with what is of every day occurrence. Nor is this a task of difficulty, or one of dull routine. Every change of elevation or of temperature is accompanied by a variation both in plants and animals; and every season and week, nay, almost every day, brings something new; so that while the book of nature is so accessible, it is infinitely more varied than the books of a library. In whatever place or at whatever time one may be so disposed to take a walk in the most sublime scenes or on the most barren or bleakest wastes, on arid hills and mountains, or by the

margins of rivers or lakes, inland or by the ocean shore, in the wild or on the cultivated ground, and in all kinds of weather and at all seasons of the year —some things in nature are ever fresh and open to our inspection and inquiries. The sky above us; the earth beneath our feet; the scenery around; the animals that rove and gambol in the open spaces; those that hide themselves in the forests or in coverts; the birds that flit and twitter on the wing, sing in the woods, ride upon the waves, or float along the sky; the fishes that tenant the waters; the endless insects that make the summer air alive; all that Nature has made is to us for knowledge, and pleasure, and usefulness, admiration, and health; and when we have somewhat studied and become acquainted with His workmanship, we have made one important step toward the adoration of His omnipotence and wisdom, and learn through these His natural laws, to be obedient to them or to His will.

SPRINGS.

BY NATURALIST.

Water that falls on the earth as rain runs off the surface by rivers into the sea, or is evaporated back again into the atmosphere within a very short time. The remaining part disappears. It passes into the earth's crust, being absorbed into the soil and surface rocks, or entering the innumerable crevices and fissures that exist in all rocks near the surface. Making its way through permeable rocks, such as sand, or passing into natural reservoirs or along some underground channel, it circulates through the earth for a time, longer or shorter, according to circumstances, and comes at length once more to the surface. All water obtained or obtainable from the interior of the earth is called *spring water;* and all sources of water within the earth are called springs. They differ in their nature very considerably. Of ordinary springs there are three kinds. Rain which can not descend far into the earth through loam or sand, on account of some close or impermeable rock, forms springs which are called land springs. They are useful—for watering plants, for instance—but they are too subject to impurities for drinking for man or beast. If a water-bearing bed is reached by a well sunk through an upper impermeable covering, the water will rise to find its level; and in the case where the water enters at a higher level than where the well is sunk, it may rise up to or even above the surface. Springs obtained in this way are called artesian, and were used in ancient Egypt. Water must constantly be circulating through natural fissures in the earth at all depths, and at those depths where the temperature is high the water will become warm. Water that rises from, or that passes through the earth, is not chemically pure. Even rain is not pure, for before it reaches the earth it absorbs mineral matter from the atmosphere. Mineral springs very frequently emerge near volcanoes, and there is no known volcanic region, past or present, in which they are not found. The quantity of water issuing from springs varies, as might be supposed, to an almost indefinite extent. The temperature of mineral springs varies from some degrees below the mean temperature of the place where they issue to many degrees above the boiling point. The hottest known are directly connected with active volcanoes, and the hot waters of the California Geysers and Calistoga must be so connected,

although at a great distance off. Mineral waters may be expected to contain all those substances which water in its passage through the earth can find and dissolve. Water is a universal solvent. Still, the number of substances generally found in mineral springs in important quantities is very limited. A small number of acids, and an equally small number of bases reciprocally saturating one another, completes the list. When the saturation is incomplete it is always the acid that is in excess.

The following are the acids most generally met with: carbonic, sulphuric, hydrochloric, hydrobromic, hydriodic, nitric, phosphoric, boracic, and arsenious. The following are the bases: soda, potassa (rarely), lime, magnesia, lithia, the oxides of rubidium and cœsium, oxides of iron and manganese. Besides these, are oxygen, nitrogen, silica, alumina, and certain nitrogenized substances. Besides the mineral acids, organic acids are sometimes detected.

It has been stated that within the limit of human observation, the temperature of water coming from considerable depths through natural fissures, is, in each particular spring, invariable; but there is no doubt that changes may occur, and it is certain that in some instances they do. They may be affected by either drought or rain. Their quality may be also affected by the same means, as we have discovered when drinking the natural soda water from Napa Soda Springs. In the rainy season it is weakest in minerals, in the summer it is most impregnated with them. Napa Valley and Lake County, which we visit every summer, abound n springs, many of which are mineral. There are the Calistoga Hot Springs, long known to the Mexicans and Indians, and their curative qualities in some diseases have been long known. These waters hold in solution sulphur, iron, magnesia, and various other chemical properties. There is a well whose temperature is 185°. A bath-room has been erected over a spring of a temperature of 195°. Another well was bored at this place to the depth of sixty-five feet, when the boring instruments were blown out with tremendous force, high into the air. An attempt was made to pump water from this well; after a few strokes, a violent steam was blown out ten or fifteen feet high. If the pumping was stopped, the blowing would stop also, but renewed afresh as often as the pumping was renewed. The water at the top being cold, seemed to hold in abeyance the steam and intensely hot water below; the action of the pump relieved the superincumbent pressure, when the hot water below rushed out. The waters of the celebrated Napa Soda Springs, five miles from Napa City, hold in solution soda, magnesia, lime, iron, alumina, and other properties, and are considered not only a very pleasant but a most healthful beverage. The vegetation round these Springs is evidently benefited by being watered by these springs. Near Clear Lake there are some similar springs, and they are all well worth visiting, and will interest persons wanting to be informed concerning the subject of this paper.

FLORA OF JAPAN.

Azaleas and Diervillas grow in great profusion, and with their pink and scarlet flowers produce a magnificent effect. Among other flowering trees there are the common Pear (*Pyrus communis*), the double flowering wild Cherry (*Prunus pseudo cerasus*), a wild Plum (*Prunus*), and a shrub looking like a

wild Apple (Japanese "sanshasi"), which produces clusters of small red fruit, very likely (says M. Louis Bohmer, who made the exploration now abbreviated) a *Lyrus toringo*. There is another most remarkable climbing shrub (the "Kokuwa"), a species of Actinidia. The only timber trees seen were *Cryptomeria Japonica*, evidently planted there. There were seen only a few small Oaks. Among the herbaceous plants are *Plaucidium palmatum*, a beautiful ranunculaceous plant, also found in the mountains of Nikko, and never yet introduced into foreign gardens. The Lily of the Valley covers the meadows by acres. In the hills several varieties of Solomon's Seal (*Polygonatum*). Where there is water there is to be seen fine Arums, bearing flowers more than twelve inches long, resembling the *Calla Æthiopica*, but of larger size, which would be a valuable acquisition for our ponds, and is hardy, being found growing with *Caltha palustris*. Ferns are very abundant on the hills; among them the *Adiantum pedatum*, a kind of Maiden-hair Fern. *Asplenium*, *Polypodium*, and *Pteris* are also abundant.

Within ten miles of Hakodate there are good-sized trees, although not frequent. They consist of Horse-chestnut, edible Chestnut, Walnut, Magnolias, beautifully leaved Maple (*Acer pulmatum*), Alder, Birch, and an Ash. Fruit-trees are badly attacked by butterflies in some localities. At a high elevation a beautiful climbing shrub, called by the Japanese "Matatabi," was recognized as *Actinidiæ polygama*. The points of the leaves have the appearance of flowers. On close inspection, however, the flowers are under the branches, resembling those of the Tea shrub. They are sweet-scented, and belong to the same family as Tea and Camellia. (The editor of the *Gardener's Monthly* is doubtful concerning this). The appearance of the shrub is elegant, and would well repay introduction into our shrubberies, Mr. Bohmer thinks. It is frequently found growing in company with and climbing on *Magnolia pypoleuca*, which grows to a size there of two to three feet in diameter, and to a height of at least sixty feet. A remarkable tree, much valued for its timber, is the Japanese Katsura, the scientific name of which is *Cercidiphyllum Japonicum*, only lately classified under the family of *Magnoliaceæ*. There are recorded two species in the country. It grows to a large size, and attains a height of over 100 feet, with a diameter sometimes of six to eight feet. In the ponds a small Water Lily (*Nymphœa teragona*) is found, the undeveloped leaf-buds of which are considered a great delicacy by the Japanese, and eaten by them with vinegar. The leaf-buds are covered with a mucilage like fish spawn. The flowers are white like a small *Nymphœa*. In the valleys are the timber trees before named. The undergrowth is composed of a close-growing Arundinaria, which is commonly called Bamboo Grass, and is a favorite food for horses and deer. Among the climbing shrubs is the magnificent *Schizophragma hydrangoides*, which will be a fine novelty for our parks. It is a true Hydrangea, but resembles a white Clematis at a distance. It has a rich green foliage. *Euonymus radicans* was found, a plant now well known. It is an evergreen, and covers trees like Ivy. The only Conifer growing in the districts explored was *Taxus cuspidata*. The soil is generally a black mold, the substratum of which is a dark brown loam. Most of the grains are found growing. *Lilium Thumbergianum* is cultivated to a great extent with *Dios-*

corea batatas, a species of Yam, for the sake of their edible bulbous roots. On a pretty stream was found on the stones a singular Lily, new to cultivation, named by Professor Gray *Lilium medeoloides*. It much resembles a Fritillaria, its leaves being verticillate or like a wheel. Its flowers are scarlet. The young shoots of the Brake Fern, Japanese "Warabi," are much prized as food. The fronds are used, when undeveloped, in soups, etc. Several Hydrangeas abound, as *H. spicata*, with spikes of white flowers, different from other Hydrangeas. Another is of a beautiful sky-blue color. It is probably *H. acuminata* of Siebold and Zuccarini. Among the rocks are two different kinds of Club Moss like those known in America, and used by bouquet makers. There is a Fern called *Lomaria Japonica*, with tinted fronds.

Shakotan is famous for the production of a peculiar kind of Bamboo (*Arundo*), used by the Japanese for stems of pipes and writing brushes. There are Ferns growing with variegated fronds. Variegated fronds among Ferns are very unusual, especially in northern latitudes.

(TO BE CONTINUED).

Selected Articles.

HINTS FOR EASTERN SHIPMENT OF FRUIT.

Everything which tends toward a better understanding of the demand for California fruit is of value to our fruit-growers. We have received from Davis & Sutton, 75 Warren Street, New York, a circular stating the kinds of fruit which succeed best in the Eastern markets, and giving hints concerning the best ways of packing and shipping. As the writers have had considerable experience in handling California fruit at the East, we regard their statements as worthy of attention:

The summer fruits should be sent by passenger trains to insure their arrival in good order. We commence the season with early Moorpark Apricots and early Pears as follows: Bartlett, American Russet, Louis Bon, white Doyenne; also, a few early French Plums. And a little later we receive the following varieties of Pears and Plums: Doyenne du Cornice, Beurre Hardy, Onondaga, and Flemish Beauty Pears; Bradshaw, Coe's Golden Drop, Jefferson, Magnum Bonum, White Egg, Duane's Purple, Washington, Columbia, and Quackenboss Plums. Also, the Gros Prune d'Agen and German Prune. This comprises the list of summer fruits, but some of the above should be more liberally shipped than others. For instance: The Bartlett, White Doyenne, Doyenne du Cornice, and Beurre Hardy are special favorites; and in Plums the largest find the best sale, such as Bradshaw, General Hand, Duane Purple, and Gros Prune d'Agen. The latter is an excellent variety, and commands more money than any other, as they come in very good order. The fall and winter Pears are as follows: Beurre d'Anjou, Beurre Clairgeau, Duchesse d'Angouleme, Glout Morceau, Winter Nelis, Vicar of Wakefield, Beurre d'Aremburge, Doyenne d'Alencon, Pound, and Easter Beurre. All these can be sent by slow freight at one-half the expense. Of these we recommend the largest share to be Winter Nelis and Easter Beurre, and a liberal share of Beurre Clairgeau, Glout Morceau, and Duchesse Pears. The Winter Nelis is one of the best Pears we get. It is adapted to all classes of trade on account of its superior quality. The Beurre Clairgeau is also a favorite, owing to its size, shape, and handsome

color. The Easter Beurre comes after the others are out of market, and is an excellent shipping Pear. We have secured quite a foreign demand for them, and each year it is increasing. We have endeavored to give you the best varieties to ship. You may say we have omitted one kind of fruit (the Grape) which is one of your largest productions. It is not because it would not find a ready market, but because they do not arrive in good order. We are in hopes that some mode of curing and packing, similar to varieties sent from Spain, will be adopted. If it can be done we can find an outlet for immense quantities of them.

We propose giving some important suggestions in selecting and packing fruit. Select the largest and smoothest fruit. Small or gnarly fruit is not desirable, neither does it pay for transportation. And it is a very poor plan to pack large fruit in the top and bottom, and small in the middle of the box; it is soon found out, and does more harm than anything else to a brand of fruit. Wrap the fruit carefully in soft Manila paper (light yellow), completely covering it; it looks better and packs better. Do not use common brown straw paper, as it is too coarse, and bruises the fruit. Let the fruit be packed carefully and tight. Have the boxes full to prevent it from moving about by the constant jar it undergoes in its long journey. If well packed the boxes average 48 to 50 pounds gross. Have stencil plates for each variety, and be very careful to mark each box correctly. It often occurs that a fall Pear is marked a winter variety, and the box may not be opened for months, and when opened it is found spoiled from such neglect. Plums should be wrapped the same as Pears, and particular pains taken with them in packing, as they are more delicate than Pears and very easily bruised. Have the package made of well seasoned wood, light and strong and neatly finished. Nail a strip across each end on the top of the box, for ventilation when tiered in the cars, and it also prevents bruising the top layer of fruit when the boxes are packed full, as they should be. Another caution to the shipper is not to pick Pears too green, and have them shrivel and not ripen. This quite often occurs, and creates dissatisfaction among buyers.

FRUIT GROWING NEAR SANTA ROSA.

Following is a statement of the experience in fruit growing of Richard Fulkerson, who formerly lived within a mile of Bloomfield, Iowa. A portion of the farm on which the orchard stands, was purchased by Col. J. B. Armstrong, and is now included in the corporate limits of Santa Rosa:

I think the valley from Santa Rosa to Cloverdale the best fruit growing section in the State. I have been twenty-two years in the State, having had experience in growing fruit in Tennessee, Kentucky, Indiana, and Iowa, previous to coming to California. I first planted Apples, Pears, Plums, Cherries, and Quinces. I have one Apple-tree of that lot that bore at three years old, a Roxbury Russet, and has borne every year since, and is now in May, 1876, full of fruit. In fact, all that I set out then have borne every year since. I afterwards planted Apricots and Nectarines, ten varieties; four varieties of Almonds, and over twenty varieties of Pears, and have now twenty-five varieties of Pear-trees which are full, and have averaged a good crop every year since they came into bearing seventeen years ago. I have also

two varieties of Figs, the white and blue Smyrna; the oldest two trees are fifteen inches each in diameter, and four feet in circumference. One of these trees shades by measurement thirty feet across, which would give a circumference of ninety feet of shade of one Fig-tree sixteen years old. My forty trees bear every year two crops. The first crop matures about the last of July. The second crop is larger than the first, but does not mature so well. I sell some green and dry the rest. The birds are more destructive on Figs than any other fruit. Of the second crop not more than half will mature. Good Figs will always sell for five cents a pound green, and when dried from twelve to fifteen cents per pound. Cherries are a very profitable fruit. They sell on an average for from eight to ten cents per pound. The Cherries ripen about the fifteenth of May in my orchard. My Cherries are about ten years old, and bear every year. I have a number of varieties of early Apples that ripen in June, and early Plums that ripen the first of July. I always get a good price at home for early Pears and Apples. My next fruits to mature are Apricots and early Peaches about the middle of July, and from that on Prunes, Plums, and Peaches, until the last of September, and Apples and Pears until the end of November. Apples keep best out in the orchard piled up beneath the tree in any kind of a pen to hold them together, with boards or straw on top to shade them. The fall of rain on them seems to be absolutely beneficial. In the house and in cellars—or in any close place, they will rot. It is never cold enough to freeze them in the most exposed places. Last year I had Pears in the orchard in open boxes until the first of January, which kept perfectly sound. I have a variety of Pear which keeps until April; I sold them in Santa Rosa often in April. I dry from my orchard Plums, Prunes, Pears, Apples, Peaches, and Figs. It pays well to dry fruit here. I get for pitted Plums and Prunes dried, eighteen cents per pound; Pears from twelve and a half to fifteen cents; Apples from seven to ten cents; Peaches from eight to twelve cents when dried in the skin; taken pitted we get from fifteen to eighteen cents per pound. For my Quinces I get four cents a pound when green. I think Pear-trees yield from three to five bushels of Pears at ten years old, and the yield increases as they grow older. One variety in my orchard, the Flemish Beauty, ten years old, yields about eight boxes of fifty pounds each—four hundred pounds to the tree. Of the twenty-five varieties in my orchard, I consider the Seckel, Bartlett, Winter Nelis, and Easter Beurre the best. The Flemish Beauty is a fine bearer, and excellent for drying. I have forty varieties of Apples. The best early Apple is Red June, the Astrachan, the early Harvest, and the May Apple. Of the fall Apples, the Baldwin, Roxbury, Russet, Golden Apple, Yellow Bellflower, Fall Pippin, and Gravenstein. Of the winter Apples the Newtown Pippin is the best.

Of nuts I have the Almond and two varieties of Walnuts, two Chestnut, and one Olive-tree. Neither of the latter are old enough to bear. The Almond-trees are bearing, and are profitable. I took eighty pounds of dried Almonds, by actual weight, from two trees. They are worth from eighteen to twenty cents a pound. I have two Pomegranates bearing; they never miss. The Olive-tree is now in bloom—two years old from the cutting. I have also Black Pepper-trees, which are full, but the

fruit does not mature. I have also twenty-four acres of vineyard, and perhaps twenty-four varieties of Grapes. For wine, the Zinfandel, the White Reisling, Black Muscatel, and the Muscat of Alexandria are the best. For table Grapes, the Black Malvoisie, the Black Hamburg, Queen of Neice, and the Rose of Peru are the best. The most showy of all Grapes is the Flame Tokay. I sell Grapes generally to wine makers. Table Grapes average two cents a pound; wine Grapes generally a cent a pound. The best varieties of foreign wine Grapes are worth from twenty-five to forty dollars per ton. I cut one hundred tons of Grapes, year before last, from my vineyard—an average of a little over four tons to the acre. For raisins, the Muscat and Flame Tokay are the best. I made several hundred pounds this year which were very fine, and sold them for fifteen cents a pound. I think raisin-making would be profitable as a business in this section. We scald the Grapes first and dry them in the sun. They will dry, in good warm weather, in five or six days, and then are pressed in boxes. I have sold all my raisins for the last few years in Santa Rosa; also my Almonds and dried fruit. The low hills adjoining the valleys, having an elevation of from twenty to one thousand feet above the plain, are best for most fruits and Grapes. Except for Apples and Pears the soil on the plains is too rich and strong. The trees go too much to wood.

In this country there is no rain after the middle of May, when the rainy season closes. No irrigation is required in Sonoma County. My custom is to plow and thoroughly pulverize the ground before the rainy season closes, keeping the surface as level as possible. I don't plow, if I can help it, after the rains. I cultivate, if necessary, with harrow and cultivator. Under this treatment, the land retains its moisture, on the principle that a hard surface is a condenser of heat, and dries out the soil to a great depth, while a finely pulverized soil is a non-conductor of heat, and by capillary attraction, absorbs like a sponge the moisture from below. I have raised Watermelons of forty pounds weight, without a drop of water on the surface, and last year I had plenty of Squashes weighing from seventy-five to one hundred pounds each. I have also raised forty bushels of Corn to the acre, on which no rain fell. This system, in my opinion, applies with equal force to all kinds of crops and soil. I treat my orchard, vineyard, vegetable garden, Corn and small grain in the same way. I am satisfied that this is the best system of cultivation in this State.—*Sonoma Democrat, June* 10.

THE ISLAND OF JUAN FERNANDEZ (ROBINSON CRUSOE'S).

This is the scene of Alexander Selkirk's sojourn from 1704 to 1709. He was a real person. The island is a deep volcanic ridge, extending from east to west a distance of about twelve miles, with a breadth of only a few miles. The highest peak, called by the Spaniards "El Yunke," from its resemblance to an anvil, rises to a height of 300 feet. The south side forms an almost vertical wall of bare rock; the opposite side is divided by spurs into a series of valleys, which, viewed from the sea, present a very fine appearance, the hills being covered with forests of dark Myrtle, and the glens clothed with a rich vegetation, composed of the Myrtle, the Peach, and a great variety of ferns, flowering shrubs, and aromat-

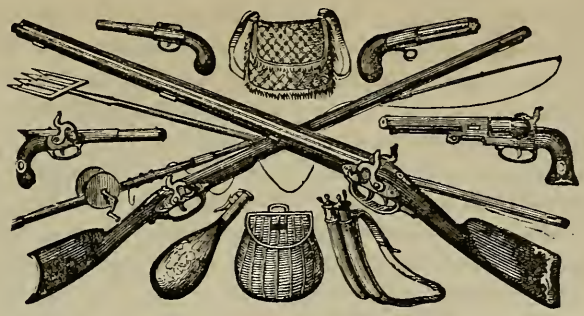
ic plants. The Mint grows in large patches, scenting the air all around; and a plant called the *Gunnera scabra*, resembling an enormous Rhubarb, grows almost to the height of a tree, so that half a dozen men could find shelter under a single leaf. The glens terminate in small bays teeming with fish; there is a large gold and brown colored cray-fish (*Palinurus*). These glens are separated from each other by high cliffs. Among the birds are numerous varieties of the humming bird, a species of thrush with yellow legs and bill, and flocks of wild pigeons. This, as most people know, was the retreat of the original Robinson Crusoe. The general aspect of this place, however, is not inviting; the clouds which gather perpetually about the mountain peaks and descend into the glens, deepen the gloom of the Myrtle forests, and produce an impression of sadness and melancholy not at all in accordance with the glowing pictures of tropical scenery created by the genius of Defoe. —*Late Cruise of the "Challenge," a British ship.*

[In addition to his enforced captivity from shipwreck, and his suffering from want of common comforts of life, Selkirk must have had a long gloomy abode on this foggy land, the beautiful vegetation and flowers, it is true, somewhat cheering him at times. But he might in some way have caught fish and turtles, and perhaps killed with a bow and arrows some of the birds, and caught a few of the wild goats which are known to have supplied him with food and clothing. Still, the ingenious and beautiful narrative or tale of Robinson Crusoe appears so near reality to all readers, that no one is dissatisfied with it, although it is mostly imaginative, and goes far beyond the matter of fact of the case.—Editor.]

NEW YORK HORTICULTURAL SOCIETY'S EXHIBITION.

Among many rare dwarf evergreen shrubs was the *Retinospera plumosa aurea*, looking as dense, soft, and velvety as a clump of Moss, yet many times larger than the largest tuft of Moss ever was, and threatening to turn into a mass of gold on its first encounter with a sunbeam. There were also a large number of new Maples from Japan, all curious either for their shapes or colors of their foliage, and suggesting many new possibilities to persons with a fondness for grouping deciduous trees. The beautiful climbing Fern (Japanese), which most ladies fear won't grow in the house, was exhibited in great quantity. Although the blooming season of Orchids was two months past, there was a good display of these wonderful flowers, among them being some magnificent Cattleyas, of the bloom of which we can get only a faint conception by imagining a rose-colored Iris two or three times enlarged, and with many variegations of hue and tint. Handsome Ferns were almost numberless, and among them were many varieties of the Maiden-hair Fern, which so beautifully ornaments a parlor. A dozen fine specimens of the hardy (Ghent) Azalea made many people acquainted with a flower which, though cheap, of easy culture, and of unequaled brilliance among spring-flowering shrubs, has not been seen by one American in a thousand. Large plants of the Rhododendron, loaded with clusters of exquisite flowers, demonstrated to doubting souls that the improved varieties of this plant *can* blossom.—*The Christian Union.*

Let every one plant a tree, in commemoration of the nation's hundredth birthday.



Rod and Gun.

CREEK FISHING—DIPPING FOR TROUT —FLY-FISHING.

BY E. J. HOOPER.

Dipping with the natural or artificial fly is a method of fishing well adapted to our rainless summers, when the creeks are fine and low, and when the majority of the brook trout have retired chiefly from the larger streams and shallows to the deep and shady pools, where they can lie in quietness and comparative security, screened from the fierce rays of the sun. And it can best be practiced in rather calm weather, and on such waters as are fringed by overhanging trees and bushes, which not only form a harbor for the fish, but also serve to conceal the dipper from observation during his operations.

It will be found not only a very quiet and agreeable method of sporting beneath the cool and refreshing shadow of some tangled woods or forests, but also a very successful plan for procuring a dish of these speckled beauties when all other efforts in larger rivers are futile. And thus the enthusiastic sportsman may enjoy a few pleasant hours' diversion in place of sipping cider or beer, or any stronger drinks in some saloon, or smoking himself into a red herring at home, to avoid the effects of *ennui* or blue devils.

The rod used for dipping here in our canyons ought generally to be short—not more than eight or ten feet long, and sometimes even much less—to be conveniently managed. Even a common one and a half or two-dollar rod will answer the purpose well. But to reach across any large pools, a rather long rod, or rod that can be elongated at pleasure, is desirable. The line must be of the finest but very stoutest gut for a leader, and may be attached to any rather fine line to be worked on a light reel like the Orvis (a new and excellent article), to lengthen or shorten the line as may be convenient; and the hooks must have short shanks, and if the natural fly, or grasshopper, or beetle are used, be of proportionate size to such objects used as bait. The blue-bottle and almost any kind of large fly are good dipping baits, although the procuring them is rather a difficult matter, and the capture of the baits will often involve more trouble than catching the fish, unless the sportsman is young, nimble, and fond of pedestrian exercise. Grasshoppers form excellent natural baits, and may be dipped with either on the surface, or sunk to mid-water, by placing a small pellet or shot of sufficient weight eight or ten inches above the hook, when they will be greedily taken. They may be met with on any dry grassy bank or ground facing the sun, between the months of

May and September. The middle-sized and greenest ones are the best. They may be carried in a wooden box, wide at the bottom and narrow at the top, with a sliding lid, by withdrawing which a little, to admit the light, they will readily creep out, one at a time. In baiting with these, the hook must be stuck transversely across the middle of the thorax; or be entered under the head, and lodged in the body. Black crickets are very enticing for baits; so, also, are any of the common black or brown beetles, to be angled with as directed for grasshoppers. Various species, of different sizes and colors, may be found infesting different sorts of trees and plants, and under stones and rocks, as well as in the neighborhood of all decaying matter, animal and vegetable. In preparing beetles for baits, the elytra, or external wing-covers, should be cut off with a pair of scissors or otherwise, and then the hook inserted through the throat, allowing the legs to hang downward, when they may be dipped with on the surface the same as flies.

In fishing with beetles and grasshoppers in the streams and open water, place a single shot pellet on the line in order to keep the bait rolling along about mid-water (this may be done by proportioning the size of the shot pellet to the strength of the current), and commence at the top of the stream, as in worm fishing, (we need hardly state that the large brown earth worm is a capital bait), and creeping cautiously forward on hands and knees, if requisite, drop the beetle or grasshopper gently and slyly over the bank, close by the edge of the water, in the first instance, then gradually advance, cast after cast, until you can fish the whole stream regularly down. Throw the bait gently across the water, after the first few trials in shore, and allow it to swim quietly down with the current, sometimes just under the surface, and at others about mid-water, particularly where it is deep.

Care must be taken with these natural fly-baits, that they are never allowed to sink below the surface on any occasion, or they immediately become useless; and, for this reason, they are best adapted for dipping over banks, or among trees and bushes in calm weather and in still water, while the more hardy beetles, crickets, and grasshoppers are equally suited for fishing at mid-water. Every attention must be paid to keep the fingers clean and dry in attaching the winged natural flies to the hook; otherwise their wings will be damaged, and themselves rendered valueless as baits.

In pursuing this stealthy mode of fishing, every operation and movement of the sportsman must be conducted with the most cat-like secrecy and caution; as on the adroitness of his proceedings success in this branch of the art will chiefly depend. On proceeding to work, the fisherman must endeavor to conceal himself perfectly from observation, by snugly ensconcing himself behind a bush or overhanging bank; and at the same time take the utmost care to render the rod and tackle as little conspicuous as possible. He must then draw out as much line as will reach from the tip of the rod to the surface of the water, but no more; and having attached to the hook the bait, he must swing it cautiously over, and allow it slowly to descend to the surface of the water, taking care to permit as little of the tip of the rod to project beyond the bank as he conveniently can. If, on the other hand, the margin of the water is incommoded by bushes or boughs of trees, he will

not be able to swing his bait over in the above fashion, but after affixing it to the hook, he must proceed to coil the line around the tip of the rod, until it will pass among the branches without getting entangled, when the rod must be introduced very slowly and deliberately through the branches into a proper position, and the line uncoiled and the bait lowered, by twisting the rod in the opposite direction, until the hook reaches the water. The top of the rod should be concealed as much as possible among the branches. While in the process of lowering the bait, if it is found necessary to move the rod at all from its position, it must be done very slowly, to avoid creating alarm, as the more it is made to assume the character of an extended branch, the less likely will it be viewed with suspicion. Before reaching the water, the bait should be suffered to dangle backwards and forwards a few times, just hovering on the surface. This will exhibit it in a very tempting manner, and it will inevitably be seized with the greatest eagerness the moment it touches the surface, or even before it has time fairly to do so, provided there is a trout within sight of it, and the sportsman keeps his own anxious visage out of sight. On a fish being hooked, the angler must either contrive to lift him slick out of the water, with as little disturbance to it as possible; or otherwise, if too large to admit of such a summary proceeding, he must endeavor with all speed to lead him away from the pool, where soon sport may be had again, toward an eligible landing-place.

Worm fishing is peculiarly adapted to the spring months, before the appearance of flies on the water tempts the fish to leave the bottom; then it must be reckoned the sheet-anchor of the angler's hopes, and he will generally succeed with it to his heart's content, and return home with a heavy basket.

THE SPORTSMAN.

A great injury has resulted in the physical education of youth, from confounding the terms "sporting-man" and "sportsman." Many parents have been unwilling that their boys should become sportsmen because of their very proper dislike of sporting-men. But these terms are in reality the very opposites of each other. A sporting-man is a haunter of all places of questionable resort. He dabbles in betting-books, buys and sells pools at races. He knows nothing of the sports, which he pretends to patronize, beyond their nomenclature. A horse-trot is not to him an exhibition of animal spirit and physical endurance, but a dexterous piece of jugglery by which money may be won. He is a patron of the ring and the cockpit, a vulgar fellow to whose idea of a good time whisky is indispensable. This equivocal being has been regarded by many as a sportsman, and hence many have been deterred from following the real sportsman's craft by flood, and field, and wood.

But your true sportsman is a gentleman, usually quiet in his deportment, a lover of beautiful scenery, and the study of nature in general. He does not kill for the sake of killing. The power which was given to man "over all beasts" is assumed and wielded by him in the gentlest manner. That the lower animals should die a sudden death may be accepted as a requirement in their existence, which is again an undoubted necessity to humanity. A more painful supposition could not be made than what the result would be were they allowed to lie down and die

in our midst of wounds, disease, or old age. The true sportsman, viewing sport in its higher aspects, delights to see his game fall instantaneously, and is grieved should it, wounded, escape to die unfound. His bag of game or basket of fish is rather an accessory to the health, giving exercise and diversion which he seeks in the open air. He will tell you after returning from a half day on one of our mountain streams with a light basket of trout, that he feels paid for his time and labor, and is just as anxious to repeat the exercise as if he had returned with his basket full. It is the fresh pure air, the prime necessity of a healthy state of existence, the exhilaration of spirits which comes from the quickening process of combustion by which the used-up atoms in the body are burned up and removed, that lead the sportsman over the hills and beside the streams, rather than the pecuniary value of the fish and game.

The true sportsman has always an amusement to turn to, by which the course of his thoughts is completely changed, his mind relaxed, and his body restrung. The return of the fishing season provides for him intense bodily and spiritual enjoyment. After months of duty in its dull routine, especially if there has been care or controversy, or any trial of feeling in his experience, he repairs to the forest and stream as a rest from excitement, and there finds, in their quiet, gentle, and changeless beauty a balm and joy. This devotion to the sports of the field in their noblest character is one of the features peculiar to the British race. Ralph Waldo Emerson in his "English Traits," shows how this race has become prepared for its conquest of the earth through that combination of moral, mental, and physical qualities which characterize the sportsman. He says of the English people:

"They have a vigorous health, and last well into middle and old age. The old men are as red as roses, and still handsome. They have more constitutional energy than any other people. They think, with Henri Quatre, that manly exercises are the foundation of that elevation of mind which gives one nature ascendance over another; or, with the Arabs, that the days spent in the chase are not counted in the length of life. As soon as he can handle a gun, hunting is the fine art of every Englishman of condition. They are the most voracious people of prey that ever existed. Every season turns out the aristocracy to shoot and fish. The more vigorous run out of the island to Europe, to America, to Asia, to Africa, to Australia, to hunt with fury by gun, by trap, by harpoon, by lasso, with dog, with horse, with elephant, or with dromedary, all the game that is in nature. These men have written the game books of all countries, as Hawker, Scrope, Murray, Herbert, Maxwell, Cumming, and a host of travelers."

The great importance of the preservation and increase of fish and game to our people is in the opportunity and inducement to enter upon a sport which our people of all classes need. The farmer's boy never becomes so tired at his work in the field that he does not find relaxation and rest in "going a-fishing." Our business men, students, and professional men would live longer and do more work if they could go out once a week through the season and catch trout enough for breakfast. There is something humanizing in the craft. One will always find in the true disciple of the rod and gun, no matter how rough his exterior, something attractive, some "touch of nature which

makes the whole world kin." Old Izaak Walton thought the true angler must be a pious man. The sportsman will get, in the pursuit of his craft, as Dr. Goldsmith says, some impression of the Fatherhood of God. The most devout angler can not fail to have an experience like that which Dr. Bethune describes in his preface to Walton and Cotton's Angler, where he says: "I trust I have drunk enough of the old angler's spirit not to let such pastime break in upon better things; but on the other hand, I have worked the harder from thankfulness to Him who taught the brook to wind with musical gurglings as it rolls on to the great sea."

FISH PARASITES.

There is a fish, Professor Van Beneden tells us, called the Holothuria, which is a living boarding-house for the Fierasfer, an eel-like animal. The latter is lodged in the digestive tube of his companion, and without any regard for the hospitality which he receives, seizes on his portion of all that enters. The angler, or Beaudroie of the Mediterranean, often harbors, in the bronchial sac, a kind of eel, which is abundantly able to take care of itself, but prefers to live a life of idleness and share its host's spoils. The shark is accompanied by the pilot fish, which does not, as is often reported, exist on the leavings of his larger companion, but on his own industry, and doubtless finds some advantage in piloting his neighbor. Another remarkable fish, the Remora, literally moors itself to the body of the shark, thus converting the latter into a vehicle which carries him about without exertion on his part. When he becomes hungry he lets go and hunts for prey wherever he may happen to be. The tenacity of the Remora in attaching itself is taken advantage of by the fishermen of Mozambique Channel, in order to capture turtles and large fish. But what is remarkably curious, they pass through the tail of the Remora a ring to which a cord is attached, and then send it in pursuit of the first passer-by which they consider worthy to be caught. The fish holds on to its prey so firmly that it only remains to haul victor and captor in by the line. Is not this a novel plan of angling?

There is a crab of the family of the *Maidœ*, which conceals itself in the substance of polypidom. It is common in the Viti Islands, in company with a gasteropod mollusk, and both of them assume the exact color of the polypidom. This is a new kind of mimicry. Another crab appropriates a sea Anemone to form a living cloak to hide it from view, in order that it may spring out from its ambush to attack prey. Remarkable marine creatures are the Birgi, a kind of crustaceans which grow very large, and conceal their abdomen no longer in a shell, but in crevices of a rock. In the East Indies they remain on land, and even climb trees. They have so much strength in their pincers that it is related that one, while stretched on the branch of a tree, "raised a goat up by the ears." A family of isopods are rather dangerous messmates, it would seem, for they cut into the walls of their host's stomach, and live like Sybarites on its contents.

The most interesting fixed messmates are the cirrhipedes, which cover the skins of whales, which they never quit after once choosing their abode. Each whale lodges a peculiar species; so that the crustacean messmate is a true flag, which indicates, in some respect, the nationality. It would not be without interest for voyagers who are nat-

uralists to study these living flags.—*Scientific American.*

SMALL FISH PONDS.

The subject of fish culture is exciting a good deal of interest in all parts of the country, and I receive frequent letters of inquiry, of which the inclosed, from an Indiana correspondent, is a specimen:

"What are the most desirable kinds of fish to stock a pond fed from a spring —size of pond say 50 by 150 feet, about one-third of it ten feet deep, clay bottom? How and where shall I procure them, and what suggestions can you offer?"

The data are altogether too meagre to give any satisfactory or definite reply. Whether brook trout, the most beautiful and most coveted of our native fishes, can be cultivated in the pond, depends altogether upon the copiousness of the spring. If the spring is small, and in a dry time in summer but little more water runs than is evaporated from the surface of the pond, then trout are out of the question. They would do well enough for nine months in the year, but in the critical time in summer, when the temperature of the water in the pond would go up to 76 or 80 degrees, the trout would soon be seen floating upon the surface, dead or dying. If they should go through the first year, as they might in case of abundant rains, they would not be safe in the exceptional dry seasons that are sure to come. It should be remembered by all persons who want to cultivate trout, that these dry seasons are very hard upon trout, even in brooks well stocked and in favorite localities. We have known such seasons in Connecticut, where, in the lower portions of fine trout streams, the fish died by thousands, and were saved from total destruction only by unfailing springs in the headwaters, and swamps, where a few found refuge. An abundant supply of spring water, of the temperature of about 50 degrees, is essential to the successful cultivation of trout. They will live in water of higher temperature for a portion of the time, if a spring is within reach. They will flourish in small ponds if the stream is copious and the change of water is frequent. Some springs discharge from 300 to 1,200 gallons a minute, and of course that amount of water, minus the portion evaporated, would pass out of the pond every minute. The warmer water upon the surface would be replaced by the water directly from the spring, and the temperature would be kept down where a trout could live. If my correspondent has a spring of this capacity, he may cultivate trout. Before stocking his pond, however, it would be safe for him to invest in "Stone upon Trout Culture," or some other good manual, which he can order from any book store in the city, or from the publishers, J. R. Osgood & Co., of Boston. Trout culture is one of the fine arts, and some experience is needed to succeed in it. One thing is generally overlooked by those who make a venture in trout ponds. It is necessary for these beautiful creatures to be fed with animal food if they are to grow rapidly, and be served up at the table. In their native brooks they prey upon other fish and upon one another. They catch worms and insects that float down the current. There is a constant succession of winged creatures dropping into the brook from trees and bushes, that support them. All this is wanting in the pond upon a gentleman's lawn, and must be supplied from some other source, or the fish grow thin and poor. Unless one is

located near a city or village, where the offal of fish and meat markets is cheap and plenty, trout cannot be economically raised in a small pond. The lungs of beef cattle and of sheep are among the cheapest and best sources of food for adult trout. It should be run through a sausage cutter, and be fed every day, early in the morning or just at night, all through the year, when the pond is free from ice. Near the seashore, where the small fish are abundant, these may answer equally well. Without a cheap supply of animal food in some form, there is no profit in a fish pond.

But there are a great many ponds too warm for trout, where other fish are available. It is quite probable that our correspondent's pond is of this character. If it was larger we should say black bass were available. But they want a ten-acre pond or more, with a good stream running through. Large natural ponds or mill-ponds, with gravelly or rocky bottom; are best for this superb game fish. All the finer sorts of fish want clear, lively water for their propagation and cultivation. Yellow perch and roach would probably do well in his pond, but they are not first-rate for the table. The golden carp or gold fish of the city markets would unquestionably do well, but they are not particularly desirable as a food fish. They are a beautiful object in clear water, and are much cultivated in small ponds, in cultivated grounds, by people fond of the finny tribes. They have a market value, but the sale is principally limited to the large cities, for glass globes and aquariums. For ornament and for pleasure, a small fish pond may be very desirable upon a gentleman's premises. It is only in exceptional cases that they can be made profitable. —*W. C. in Country Gentleman.*

CATCHING A PIKE.

"I've got him."

"Humph," came from my friend.

"A good-sized fish," I said, after a pause, during which I was playing at give-and-take with my pike.

"S'pose so," said my friend cynically.

There was a pause, all work, and then I proclaimed my opinion that I had a ten-pounder, and my friend smiled derisively. Two minutes after, as the water swirled and eddied as the pike played about, I declared him to be twelve pounds. Then my friend grew slightly interested, and when soon after I vowed my captive at least fifteen pounds, he laid down his rod, picked up the gaff, and came looking breathlessly on. There was a "fite," as Artemus Ward would call it, going on at this time, the heavy fish trying to get out all my line, and I striving hard as I could to economize every inch, and yielding to every forcible struggle, lest the thin gimp in my hook should give way. Did my rod bend double? Oh, no. If it had there would have been no capture; but keeping a gentle, wearying stress upon the tyrant of the waters, I played with him till by slow degrees I gained forty yards of line upon my reel, and brought him close in to where, once or twice, we caught a glimpse of horrent jaws, bronzed scales, and a long, rushing body. But he caught sight of us, and evidently at least blaming us for this strain upon his jaws, he rushed off for the middle, making the line sing, and the winch whirr, as ring after ring was reeled off. Again I had him in close, and away he went, and so on for half a dozen times, till, tired out, he prepared to yield, and some five and twenty minutes after he was hooked, my friend gaffed him, and dragged the furious monster, kicking

and plunging, on the grass, while the gaff-hook was bent nearly at right angles with the weight.

"A twenty-pounder!" exclaimed my friend joyfully, as we stood gloating over the noble proportions of what proved in scales a five and twenty pounder, the finest pike I ever caught. He was massive across the back, thick down to the tail, his shoulders rose like a hump behind his head, and he was glistening in his scale armor, all gold, bronze, and metallic green. Fins, barred and ruddy; eye, bright and furious, and the monster—for a fisherman—leaping and bounding in the grass. Further examination proved him to be a young and healthy fish, with small teeth; his length three feet six inches, and girth nineteen inches; while in the pride of his heart at a brother fisherman's success, my friend exclaimed, "what a beauty!"

The tide then turned, and my friend caught a four-pounder, then a five-pounder, next one quite seven, when once more I had a turn. Then for hours we did not have a run; but as the evening neared, we, who had patiently fished on through the rain, were rewarded by the sport recommencing with varied fortune, till just at dusk my friend got fast to a goodly fish, which, on being landed, proved to be fourteen pounds. That finished the day, and when we had packed up our traps we found ourselves standing beneath a dripping tree, with sixteen fish to the good, the smallest of which was about three and a half pounds. Over our pipes that night, when the fire shone warmly on us, we fought our battles over again, and, though we had not kept count, came to the conclusion that we had taken eight each, our total weight being about one hundred and thirty pounds.—*Once a Week.*

THE GAME LAWS.

For the benefit of sportsmen we give the following from the statutes of 1875–6:

BOUNTIES FOR THE DESTRUCTION OF WILD ANIMALS.

Section 1. Any person who shall kill or destroy, or cause to be killed or destroyed by any person in his or their employ, within the counties of Mendocino, Del Norte, Humboldt, Placer, Lake, San Luis Obispo, and Colusa, a panther, or California lion, or grizzly bear, shall be entitled to the sum of $10; an eagle, the sum of $3; a black or cinnamon bear, or coyote, the sum of $5; a wildcat or catamount, the sum of $3; and upon the presentation of a scalp or scalps of any of the above-named animals to any Justice of the Peace within either of said counties, and by oath or affirmation, or otherwise, prove to the satisfaction of said Justice of the Peace that the animals from which the scalp or scalps presented were taken were killed or destroyed in said counties, and after the passage of this Act, the Justice shall at once destroy said scalp or scalps so presented, and shall issue a certificate as follows: I, ————, Justice of the Peace in and for said county, do certify that ———— has this day presented "number—" of scalps, respectively, and has furnished the necessary proof that the animals from which said scalps were taken were killed or destroyed in said county, and is entitled to —— dollars. ————, Justice of the Peace in and for said county. In the year of our Lord, one thousand eight hundred and ——

Sec. 2. On the presentation by lawful holder of any one or more of said certificates to the Board of Supervisors of the said respective counties, the said Board shall consider and allow the same in like manner as other claims against the said county are allowed, and the same shall be paid out of the General Fund.

Sec. 3. The said scalps shall be taken as follows: Of the four-footed animals both ears must be taken with the scalp, and the upper bill must be taken with

the eagle's scalp; and if not so taken no bounty shall be allowed or paid.

Sec. 4. Every Justice of the Peace, who issues a certificate as provided for in this Act, shall be entitled to a fee of fifty cents, to be paid by the party to whom issued.

Sec. 5. The county of Humboldt will not pay bounty on the scalp of the eagle or coyote as provided in this Act.

QUAIL, PARTRIDGE, AND DUCKS.

Sec. 1. Section 626 of Penal Code is amended to read as follows:

Every person who, in the counties of San Bernardino or Los Angeles, between the first day of April of any year and the first day of August of the same year, or who in any other of the counties of this State, excepting the counties of Lassen, Plumas, and Sierra, between the fifteenth day of March and the fifteenth day of September in each year, takes, kills, or destroys quail, partridge, or grouse, mallard, wood, teal, spoon-bill, or any kind of broad-bill ducks, is guilty of a misdemeanor.

Sec. 2. Section 627 of the Penal Code is hereby amended to read as follows:

Every person who, in the counties of Plumas, Lassen, or Sierra, between the fifteenth day of March and the first day of September in each year, takes, kills, or destroys quail, partridge, or grouse, or who, in either of such counties, between the fifteenth day of March and the fifteenth day of August in each year, takes, kills, or destroys mallard, wood, teal, spoon-bill, or any kind of broad-bill ducks, is guilty of a misdemeanor.

ELK, DEER, AND ANTELOPE.

Sec. 1. Section 628 of the Penal Code is hereby amended so as to read as follows:

Every person who, between the first day of January and the first day of September in each year, takes, kills, or destroys any elk, deer, mountain sheep, or antelope, is guilty of a misdemeanor; and every person who shall take, kill, or destroy any of the animals herein mentioned at any time, unless the carcass of such animal is used or preserved by the person slaying it, or is sold for food, is guilty of a misdemeanor.

Sec. 2. Section 632 of the Penal Code is hereby amended so as to read as follows:

Every person who, in the counties of Santa Clara, Alpine, Santa Cruz, Lake, San Mateo, Monterey, Sonoma, Tuolumne, Alameda, Marin, Placer, Nevada, Plumas, Sierra, San Luis Obispo, Solano, Mariposa, Mendocino, or Napa, at any time takes or catches any trout, except with hook and line, is guilty of a misdemeanor.

HOW WOMEN FISH.

There's generally about six of them in the bunch (says an exchange), with light dresses on, and they have three poles with as many hooks and lines among them.

As soon as they get to the river they look for a good place to get down on the rafts, and the most venturesome one sticks her boot heels in the bank and makes two careful step-downs; then she suddenly finds herself at the bottom with both hands in the water, and a feeling that everybody in the wide world is looking at her, and she never tells anybody how she got there. The other girls, profiting by her example, turn around and go down the bank on their hands and toes, backward.

Then they scamper over the rafts until they find a shallow place where they can see the fish, and shout:

"Oh! I see one!"

"Where?"

"There."

"Oh, my! so he is!"

"Let's catch him."

"Who's got them baits?"

"You lazy thing, you're sitting on my pole."

"Show me the wretch that stole my worm."

All these exclamations are gotten off in a tone that awakens every echo within a mile round, and sends every fish within three acres square into galloping

hysterics. Then the girls by superhuman exertions manage to get a worm on the hook, and "throw in" with a splash like the launching of a wash-tub, and await the result. When a silver-fin comes along and nibbles the bait, they pull up with a jerk that, had an unfortunate fish weighing less than fifteen pounds been on the hook, would have landed it in the neighborhood of three or four miles in the country. After a while a feeble-minded sun-fish contrives to get fastened on the hook of a timid woman, and she gives vent to her tongue:

"Oh, something's got my hook!"

"Pull up, you little idiot!" shout five excited voices, as, poles and hooks dropped, they all rush to the rescue. The girl with the bite gives a spasmodic jerk, which sends the unfortunate sunny into the air the full length of forty feet of line, and he comes down on the nearest curly head with a damp flop that sets the girl to clawing as though there were bumblebees in her hair.

"Och! murder! take it away! Ugh! the nasty thing!"

Then they hold up their skirts and gather about that fish as it skips over the logs, one all the time holding the line in both hands, with her foot on the pole as though she had an evil-disposed goat on the other end. They talk over it.

"How ever will he get off?"

"Ain't it pretty?"

"Wonder if it ain't dry?"

"Poor little thing; let's put it back."

"How will we get the hook from it?"

"Pick it up," says a girl, who backs rapidly out of the circle.

"Good gracious, I'm afraid of it. There, its opening its mouth at me."

Just then the sunny wriggles off the hook, and disappears between two logs into the water, and the girls try for another bite.

But the sun comes down and fries the backs of their necks, and they get three headaches in the party, and they all get cross and scold at the fish like so many magpies. If an unwary chub dares show himself in the water they poke at him with poles, much to his disgust. Finally they get mad all over and throw their poles away, hunt up the lunch-basket, climb up into the woods where they sit around on the grass and caterpillars, and eat enough of dried beef and rusk and hard-boiled eggs to give a wood-horse the nightmare; after which they compare notes about their beaux until sundown, when they go home and plant envy in the hearts of all their muslin-delaine friends by telling what "just a splendid time" they had.

Editorial Portfolio.

OUR FRONTISPIECE.

We embellish our number this month with three subjects—two popular flowers, and a very favorite vegetable—the Tomato—although it may not inaptly be called a fruit, so closely does it reach this character. The Gladiolus is the most beautiful of our summer bulbs, although in many localities in California they may be made to bloom nearly all the year. "The flowers are of almost," as Mr. Vick says, "every desirable color—brilliant scarlet, crimson, creamy white, striped, blotched, and spotted in the most curious and interesting manner." And, by the by, we are indebted for all of the above engravings to this prince among flower cultivators—Mr. Vick—who thus continues his eulogistic remarks, and from his experience with flowers, they are well worthy of being noted. "Per-

haps we have no flower that presents such a gorgeous display of delicate yet brilliant colors in the garden, or on the exhibition tables, or for extensive floral decorations, as the Gladiolus." We may add that it thrives well in nearly all parts of America, and in no region better, if so well, as in California. It is very easily cultivated. The bulbs may be set from six to nine inches apart, and covered about four inches. If set in rows they may be six inches apart in the rows, and the rows one foot apart. The cuts show two plants in flower, of somewhat different habit.

The *Tritoma uvaria* is a very striking and majestic hardy plant, with flower-stems four or five feet high, on the tops of which are spikes of brilliant red and orange flowers, about a foot long, and by some have been rather unromantically and vulgarly denominated Red-hot Pokers, being supposed to bear some resemblance to that homely domestic implement. It flowers early in the autumn, and continues to bloom in this State all the winter until late in spring—its flame-colored racemes making a great show among its long green leaves, and in the general vegetation in those seasons. There are several varieties of them, but there is no great difference between them.

The pleasing group of variously shaped and colored Tomatoes represents: 1, the Cherry Tomato, useful only for pickling; 2, Persian Yellow; 3, Hathaway; 4, General Grant; 5, Early Smooth Red; 6, Curled Leaf. They all are, of course, very much reduced in size, though very well representing the form and characteristics of each. Mr. Vick says: "We are satisfied that Hubbard's Curled Leaf is the earliest Tomato grown, and this is its only merit, for it is small and far from being smooth. General Grant is an excellent early Tomato, about ten or twelve days later than the Curled Leaf, but Hathaway's Excelsior is as early as General Grant, and the best Tomato we are acquainted with. It received a certificate of merit from the Royal Horticultural Society of England, is pronounced by the press of Europe the best variety produced, and is everywhere popular. It is smooth, solid, of good flavor, excellent color, and productive—all good points in this valuable vegetable."

FRUITS, BIRDS, AND FLOWERS.

Among the many bounties and blessings of Providence, which we do not sufficiently appreciate, may be mentioned the trio which we have chosen for our caption. Fruits constitute a portion of our choicest luxuries, as well as one of our most wholesome and most essential articles of food. Fortunately, in California, owing to the certainty in the production and abundance of its fruits of nearly every kind, our whole population can enjoy them at all periods of life from the cradle to the grave, and which certainly, in addition to the healthfulness of our climate, bestow upon us great enjoyment, vigor, and elasticity of spirits, while we are comparatively free from many diseases which greatly devastate civilized society in other parts of the world at all seasons of the year.

Were adults, and children especially, plentifully supplied with good fresh fruit and plain bread, in lieu of so much of fried meats and larded short-cakes so commonly in use, we should hear less of many illnesses and complaints which sweep people and children to their graves, as though the latter were born only to die; and still less of scarlet fever and erysipelatous affections, which rage at times among our infantile pop-

ulation, as though their bodies were all unsoundness and corruption.

In most years in the East, as in the present, owing to severe frosts, fruits are scarce and dear, and in some places hardly obtainable on any terms. In the Eastern cities they are, in general, the most expensive item in a proper dietary. But they should be the most abundant and the cheapest of all food. Their scarcity, however, can be much avoided, whenever their agriculturists will take greater pains to cultivate them, combat, in some measure, the frost, by lighting smouldering fuel amidst their orchards and gardens, and in some years they would enjoy an abundance of them, and would prove the most remunerative product of the farmer.

One of the leading objections to fruit culture there is the liability of the fruit, and even the trees, to be damaged and destroyed by insects. Gardeners and nurserymen have discovered regiments of enemies to contend with, in the shape of thousands of caterpillars, bugs, flies, worms, etc., which prey upon their fruits, flowers, vegetables, plants, shrubs, and trees. And this is, indeed, a formidable obstacle; even in California we are beginning to suffer from many of these pests. The tent-caterpillar, great numbers of which we saw in Napa Valley, in particular, is vastly on the increase here, with several other sad enemies to our fruits.

But, for all this, we suspect man has a good deal to blame his own short-sightedness, or folly, or perversity. He has destroyed the birds, the natural protectors of all these things. This is especially applicable to our Eastern brethren, although we are here beginning to enact the same fault, if not crime. In the admirable arrangements of Nature, the feathered songsters are intended to be the most efficient of the husbandman's auxiliaries. Not only do they, in the natural order, amuse us with their pretty ways, and entertain our mornings and evenings with the inspiring music of joy and the sweet songs of love, but they destroy, by feeding on them, the very creatures which otherwise ravage our gardens, orchards, and vineyards, our meadows, pastures, and groves.

By destroying the birds we destroy the balance an All-wise Creator has established in the animal and vegetable kingdoms. We are doing even worse than this. We have allowed, if not taught, our little boys the wicked sport of killing the birds, thus depraving them in some measure, as well as injuring those who never did to us a single deed that was not pleasant, kind, and good. Our boys and our young men have, in the absence in many instances of real game or other animals, found a cruel pastime in the bad habit of "gunning for the pot," and they have esteemed it a manly enterprise to shoot the little innocent birds while frolicking in their roseate bowers, or swinging merrily on the tree-tops.

"O man, tyrannic lord!
How long shall prostrate nature groan beneath
Thy rage?"

Verily, we have our reward. The bugs destroy our vines, the vermin revel in our flowers, the worms destroy our fruits, and the insects prey on the foliage of our shade-trees. These pests, we admit, are not yet so prevalent on our slope as in the East, but we fear, if we do not check our children in their "sport," in a short time we shall be as badly off as our friends there.

The number of Oranges brought to San Francisco from Tahiti since Jan. 1, 1876, is 4,173,000.

SUMMER PRUNING OF FRUIT TREES.

It is singular that so little attention is paid by cultivators to the summer pruning of fruit-trees. This, we presume, is owing to custom having made it a general rule to prune trees in the spring. The system is, however, a bad one, in a certain measure, which may be readily seen by a little observation. For instance, all trees are liable to make suckers from the centre, which exhaust the substance of it and are useless; every one agrees, by common consent, that useless shoots should be cut out, and it is yearly done in the ensuing spring after they have impoverished the tree; hence they are deprived of about one-fifth of their substance annually. If these shoots were regularly cut out early, after making some growth, say in May or June, the substance that they exhaust would go to nourish the other branches and fruit.

In the second place, trees, grapevines, shrubs, etc., often become very thick of wood in the summer, especially when they are in confined places; all the young wood that is formed in this state is weak and helpless, because it can not receive the sun and air sufficiently to properly mature it; this, too, like the suckers, deprives the tree of a portion of its nutriment, or at least that portion of it that is to bear the succeeding season. This useless wood becomes weak and sickly, the leaves turn yellow, and are a nursery for various kinds of insects, and according to custom is pruned out of the tree the following spring; when common sense tells us it ought to be taken from the tree in summer, in order to give the substance it has deprived the tree of to the proper branches.

We do not contend that the summer is the season for the general pruning of trees; for we prefer the spring for this business. But whenever trees or vines are thickly crowded with summer wood, or any shoots, as suckers or straggling branches, that cause trees to grow of irregular shape, it should be a general rule to displace them, in order to keep the tree shapely and healthy.

Thinning of fruit, when young, is essentially requisite in order that it may grow to its proper size and quality. It often happens, when the spring is propitious to fruit, that the trees and vines are so loaded that it is impossible for the tree to render it proper sustenance, so that the fruit neither forms of proper size or quality. This is often the case after a failure the previous season, owing to which the trees are furnished, in the interval of rest, with a superabundance of fruit-buds or spurs; hence we often see alternate crops of fruit, which should be as much as possible counteracted by trimming out a goodly portion of fruit, when such abundant crops appear. This adds much to the quality and flavor of the fruit, and is also of a material use to the tree, in order to give it vigor to furnish fruit-buds for another season in a healthy state, which are weakened by a superabundant crop of fruit, and are often the cause of failure the next season. When sickly trees are overburdened with fruit, which is often the case, owing to weakness, they should be well thinned, in order that what is left may be well matured, for it is very evident that when fruit drops off the tree half grown, it has exhausted it in a measure to a useless purpose.

MOSS ROSES.

A few days ago a friend informed us that Moss Roses made their first appearance in his garden, in this city, on

the 29th of April, and that the last bud was taken off two months later. We can testify that they were as handsome buds as we ever saw—fresh, unwithered, and perfectly formed, with long and delicate fronds. It is difficult to raise well-formed Moss Rose-buds in this climate. In the interior the hot sun immediately scorches them so that they come to nothing. It requires a rather sheltered and cool place, and this we learn is the case with the locality where these were cultivated. The yard is well protected from the direct rays of the sun, and lies lower than the surrounding lots, so that it obtains all the natural climatic conditions requisite for the formation of handsome buds, and there is nothing we admire so much in the floral line as a full, gracefully-formed and delicately-outlined Moss Rose-bud.

ENGLISH GOOSEBERRIES.

Having been kindly invited by Mr. James Benson, of the Odd Fellows' Bank, to visit at his residence on Howard and 23rd Streets, his successful growth and maturity of the above fruit entirely free of mildew (a rare thing on this continent), we had the pleasure of seeing for ourselves some thirty bushes of this delicious fruit in excellent health and luxuriance, and bearing for their age (only two years) a fair crop. Mr. Benson cultivates four varieties, three of which had finished fruiting, and were past their time, but the specimens we saw were of the sort called the White Smith, about the size of a large Cherry Plum, only of course in shape more elongated. The soil on which they grow is a rich sandy loam, the natural earth of that part of the city. This soil was trenched, or has a depth of about twenty-two inches, and no manure whatever has been added to it. The subsoil after that depth is a yellow sandy clay, but not an impervious one or very hard. These plants are grown in the bush form, which seems the best for our climate, and the mode generally adopted in England, and also by Mr. Sandercock in Napa Valley, another successful cultivator of this generally uncertain fruit in the United States, and whom we have before noticed in two of our previous numbers. Mr. Benson's locality is a rather sunny exposure between four fences, but the bushes which are most shaded have made the most luxuriant growth. The excellence and value of the large English Gooseberries makes their successful culture of much importance to the horticulturist, both for his own use and for market. We see but little reason why, with the climatic and other advantages in some localities which California possesses beyond the rest of the States, the terrible pest of this useful fruit—the mildew—should not, in many instances, at least, with the requisite knowledge and pains, be overcome and prevented.

Mr. Benson has a beautiful garden of various thrifty fruits and flowers, showing the natural richness of the soil in that portion of the city, as well as the industry and skill exercised by him and his family in their cultivation, being an interesting instance of ladies giving flowers especially their care and attention, and thereby promoting and preserving their health and good spirits. Here we were pleased to see the old English Southern Wood or "Old Man," Yellow Broom, Lavender, the Scotch Heath, and many other flowers and plants, companions of our earliest boyhood. How much do even the very scents only of flowers and plants recall the oldest memories and associations!

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Every year there is published by the American Pomological Society (whose President is our highly intelligent, worthy, and esteemed friend, for many years past, the venerable and Honorable Marshall P. Wilder), a most valuable fruit catalogue. It consists of over 40 pages, with descriptive lists of about 800 varieties of fruits cultivated all over the Union in various localities. In looking over this Catalogue as to Apples we observe the greatest number of votes in the Society are given for Red Astrachan and Maiden's Blush. This tallies with these Apples having been found by the most practical and judicious cultivators in California to be among the chief for profit for the market. Neither of these sorts rank first-rate for high quality or flavor, but they are found to be the very best in the majority of the States for general cultivation. The Swaarar and Æsopus Spitzenberg, on the contrary, stand low in the ranks for the whole country, and are not favorites on this slope. Growth and productiveness are chiefly taken into account in the judgment of Apples as in other kinds of fruits. On this account the Winesap and Ben Davis take a high position in this State. Other popular names are American Summer Pearmain, Carolina Red June, Duchess of Oldenburgh, Early Harvest, Fall Pippin, Farmeuse, Gravenstein, Hubbardston Nonesuch, Jonathan, Sweet Bough, Roxbury Russet, the Summer Rose, Fallman Sweet, and Twenty-ounce Pippin, and in some places the Newtown Pippin does well. These all do passably well with us, though their seasons of ripening are considerably altered, and are much earlier on this coast than in other parts of the United States except portions of the South.

Pears do well in a far greater scope of country than Apples. The Bartlett, as is well known, flourishes in perfection in nearly all parts of the world where the Pear is grown, better than any other variety of that delicious fruit. Then next comes the Seckel, Beurre d'Anjou, Flemish Beauty, Lawrence, Howell, Winter Nelis, Doyenne d'Ete, Duchesse d'Angouleme, Belle Lucrative, and Easter Beurre. These all succeed well in California, with the addition of Glout Morceau, Vicar of Winkfield, Onondaga, Buffum, Tyson, Osband's Summer, and Giffard. As to Grapes, our favored coast cultivates to perfection every sort, native and foreign, for where in the United States is so fine a climate to be found for them?

As to Peaches, for the whole Union there is nothing equal to Crawford's Early and Crawford's Late. Next in general esteem and value are Oldmixon Free, Oldmixon Cling, Large Early York, Grosse Mignonne, and Cooledge's Favorite.

Nearly all Cherries, except the earliest sour ones, as Early Richmond and the Morellos, and this is chiefly owing to these not being profitable for market, do well in our State, but the favorite kinds seem to be Black Tartarian, Black Hawk, May Duke, Governor Wood, Red and White Heart, Yellow Spanish, and Napoleon Bigarreau.

Apricots of all varieties never fail here except from frost, and that destroys them merely in spots.

In Strawberries, for the whole country, the Wilson is the most popular and succeeds best. But for California there is no kind that can come up in value and profit to Longworth's Prolific. Next are, for this State, Triomphe de Gand, Keane's Seedling, Victoria,

British Queen, and Hovey's Seedling. Among the Raspberries, the Mammoth Cluster takes the lead for the whole country. The Philadelphia has a large vote in its favor also. But for California we prefer the Fastolf, Franconia, and Red Antwerp.

As to Blackberries, the preference is given in all parts of the Union, with the Pacific Slope, to the Lawton, Wilson, Kittatinny, and New Rochelle.

This brief notice by no means gives a full view of the merits of this large and admirable Fruit Catalogue, and only points out a few of the most popular of our fruits among those which have been extensively tested in the different States.

As to our markets: Many of our readers must have noticed on the fruit stands the difference in the appearance of different lots of Strawberries, some having a peculiar brightness and glossiness, which renders them exceedingly attractive, while others have a dull, dead appearance that is very unattractive. The first we speak of is always quickly sold at paying prices, while the last always "goes a begging" for purchasers. "What is the reason for this gloss?" you ask. Simply that the first plants have been well irrigated, and perhaps mulched. Mulching not only keeps the fruit clean, but by keeping the surface of the ground moist and cool, and with the help of water being at times allowed to percolate through the patch, prevents the reflection of the sun's rays from a dry, hot surface from burning or scorching the fruit, and giving it this dull, dead, and faded appearance.

Nothing can excel the large size and fine appearance of our best kinds of Cherries this year, so unspotted and free from the least blemish compared with most of those in the Eastern States. Then the mode here of packing them so regularly and closely in oblong boxes, shows them off to the greatest advantage. They are sold either by the box or the pound. With regard to Strawberries once more, we will state that a relative of ours with whom we reside received from a friend living near Alviso, a warm site for fruit, a large basket of Victoria Strawberries. We found them of a very large size, of a rather deep red color, of finer flavor than Longworth's Prolific, and unlike it, with very little acidity, and therefore requiring much less sugar; also, unlike the Prolific, their flesh is white instead of red. It is a delicious and splendid berry for home use, as it is rather too tender for carriage to market. The Keane's Seedling is nearly in all respects similar to it. The Triomphe de Gand is of great size, also, but is much better for transportation to market. We would advise persons who have country villas and gardens, to cultivate the Victoria for their own table. It is one of the most favorite berries in England.

About the middle of last month (June) there was a tendency generally to a lower range of prices. Early Peaches came in at the rate of 500 boxes per day from Solano and Yolo Counties, and prices showed a corresponding decline. A few packages arrived from the Sacramento River, and as the bulk of the supply for the market comes from that locality, it may be of interest to the public to know that the crop will this season be large, and prices of course low. Currants were plentiful and cheap. The first Red Astrachan Apples came in during the third week in June, and sold by the single box at $2.50. Green Apples were obtained at $1.50 per box. Nearly all kinds of vegetables were cheaper and generally

of improved quality. Choice String Beans from Stockton, and Summer Squash and Cucumbers from Alameda County, have taken the place of the poorer but earlier supplies from Solano County. The latter region, however, had the monopoly of the Tomato trade. Potatoes were more plentiful, and good to choice by the single sack could be had at $2 to $2.50 per 100 lbs., delivered.

There is now a long list of fruits and vegetables in the market, nearly as large as there will be, although about August the list is highest. The more fruits of course the greater reduction of prices. About the 24th of last month (June) Apricots, Peaches, Plums, and Currants were more plentiful than other varieties, and the first two mentioned continued to arrive in increasing abundance for some time. Raspberries still came forward in limited quantities, and were, therefore, not much cheaper than they had been for several weeks. The supply of Strawberries, Gooseberries, and Cherries gradually decreased, though without much change in prices, owing to the abundance of other fruit. The second crop of Strawberries came in about the middle of last month, and were of good size. We observed some few boxes of the Victoria, a round-shaped, rather dull red-colored berry, but very rich in flavor, and with but very little acidity compared with the Longworth, but it is too soft to bear carriage well. It is grown in limited quantities on this account, but is a delicious fruit for home consumption. About the 24th of June there were several varieties of Plums in market, the kinds being Coe's Golden Drop, June Plums, Prince's Imperial Gage, and a Blue variety from Placer County. Cherry Plums continued to be very plentiful. Ripe Early Harvest and Red Astrachan Apples were abundant, and retailed at 75 cents to $1 per basket, or $1.50 per box. Tomatoes, Egg Plant, Okra, and vegetables in general were cheaper. Large quantities of Potatoes were coming in, but very few of them were ripe. The best sold by the sack at $1.75 to $2 per 100 lbs., delivered.

On the 1st of this month (July) on account of the Centennial holiday, the fruit and vegetable merchants made great and particular exertions to present a splendid exhibition of these useful and delicious products on their stalls, and every one will admit that they fully succeeded in doing so, as the display was vast, various, and excellent. The show was indeed exceedingly attractive. Prices became generally lower under the quantities of fruits and vegetables, and greatly increased supplies. In what other part of the United States could there be so grand and brilliant a sight? The prices, in consequence of this abundance and variety, tended downward. Peaches arrived regularly, but the receipts were not sufficiently abundant at that time to allow all classes to indulge freely in them. By the basket good to choice Hale's Early sold at $2.50 to $3. Apricots were very plentiful, and could be obtained by the single basket at 90c. to $1.25. Choice ripe Apples sold by the box, delivered, at $1.75 to $2.25. A few Cantaleups and Watermelons were received, but prices were high and the quality rather inferior.

At about the time of our going to press the general tendency of the fruit market is still to lower prices. Peaches are coming forward in immense quantities, and have been doing so for some time, and have never been cheaper at this season of the year. Single baskets of Hale's Early and Tillotson, the principal varieties in market, can

be had at 75c. to $1.25, delivered. Plums are also very abundant, and the different varieties retail at 6 to 12½c., while by the box or basket they can be had much cheaper. Good Apples have declined to $1.25 to $1.50 per box, and Pears to $1 to $1.75. Raspberries, on account of their going out of bearing, are dear, being about 25c. per small box. Strawberries are moderate in price, being a large second crop. Grapes, white and black, are coming in in moderate quantities.

Editorial Gleanings.

WHAT THE PRIMROSE SAID.

Now, who that is wise and witty
Will tell this little maid
The thought—(it must have been pretty)—
And what the Primrose said?—*Rural.*

ANSWER.

The Primrose peeped from its fragrant bud
One dewy morn in May,
To see the white clouds sailing
Like ships on the sunny bay;
But a fairer sight than snowy clouds,
Or ships on a summer sea,
Was that which greeted the Primrose bud
With a smile of winsome glee.

A blue-eyed maiden with golden hair,
And cheeks like the Rose in June,
Was smiling down on the opening bud
And singing a happy tune.
And the Primrose said, "What a lovely world
Were it always sunny May;
If flowers could blossom forever fair,
And hearts be always gay.
But the sweet blue eyes must learn to weep,
And hearts must break with woe,
Till they reach the blessed summer land
Where the fadeless Roses grow."
—*Mrs. D. M. Jordan, Richmond, Ind.*

Planting Trees. — California would be greatly benefited in profit, beauty, and comfort by adopting the Japanese law, which requires every person who cuts down a tree to plant another in its stead. Several other countries enforce such tree planting; but there is no land which more than our own needs laws to counteract the wasteful destruction of trees for burning and constructive purposes. If the natural tastes of the people would incline them to follow the example of those cultivated and patriotic gentlemen who are planting out trees this year in commemoration of the Centennial, it would answer all the purposes of an enforced practice of the kind by law. Judge Davis, of the United States Supreme Court, has caused a tree for every day in the year to be planted this year on his farm in Illinois; and Mr. Wm. M. Evarts, a gentleman of equal eminence, has set out 594 new evergreens on his grounds at Windsor, Vermont, in commemoration of the year. It is to be hoped such examples will commend themselves to the judicial and legal gentleman of San Francisco who possess landed estates, as well as to all the rest of California's population.—*Call.*

Tahiti.—As the island is just now filling our markets with its fruits, it will be interesting to our fruit growers and consumers to catch a glimpse of the land whence the fruit comes. An enthusiastic French traveler writes: "The appearance of the shores of Tahiti offers a grand variety of natural beauties. A happy combination of land and water, of precipices, of plains, of trees reflecting the thick foliage upon the limpid waters, of lofty mountains delineating their profiles on the clear sky, gives to the spectator delightful sensations. Thousands of trees produce excellent fruit, which only demand that a man put out his hand to gather them. The landscape is pleasing with the shade of Orange and Citron trees." We doubt not since the

day when the writer visited the island the Tahitans have learned from their commerce that fruit is too valuable to hang where any one could put a hand to it, but we have good evidence of the choice fertility of the soil and the bearing of the trees, from the stores which ships are almost daily unloading at our wharves.

Selection of Pelargoniums.—Messrs. G. B., of Hackensack, ask us, among the golden and silver variegated and plain Zonales, to name those we should select as the finest of their sections. We have often thought, as we have passed through the immense glass-houses of several of our florists exclusively devoted to Pelargoniums, and have endeavored to make distinctions by which we could fix the names, that three-quarters of all might be destroyed as inferior to the others, or so nearly alike as not to be worth the trouble of either a name or of preservatian. In the silver variegated section, for instance, there are dozens so nearly alike that it is impossible to name them at sight without that sort of microscopic study that has enabled many pomologists to distinguish hundreds of varieties of fruit-trees from a close observance of color and the texture of the bark. And the same may be said of the other sections.

Ammonia for Verbenas.—Sulphate of ammonia is an excellent manurial liquid to apply to Verbenas and other flowers, giving to the foliage a dark green, luxuriant and healthy appearance. It is economical, clean, and easily applied. Prepare it in the evening before using, by dissolving one ounce of ammonia in two gallons of water. It may be applied with safety about once a week.

Pea nut Oil.—During the war the people of the South were thrown upon their own resources to an extent which resulted in developing some industries that otherwise they might never have even dreamed of. One was the manufacture of oil from Pea nuts, to take the place of Olive oil for table and other household purposes. It gradually became popular, and is now in large demand. It supplies the place of Almond and Olive oils for various uses, and is lower in price, retains its purity and flavor for a long time, and is less susceptible to the effect of light than Olive oil. The oil is extracted entirely from the meat of the nut by pressure, the refuse being used as a cattle feed or a fertilizer.

Culture of Native Flowers.—Every one who desires to remove from the woods, and other wild localities, the finest native flowers, should mark the spots where the roots may be found after the blooming season has ceased. This should be done while plants are made conspicuous by their blossoms. Small stakes inserted in the ground at each plant will show where they are. Early spring flowers have now passed, but many are coming out, and more are to follow. Our ornamental gardens should not be made up exclusively of exotics; we have many American plants of surpassing grace and beauty, which, interspersed in the wilder portions of grounds, add greatly to their attractions.

Suckers in Apple Orchards.—The remark is often made that the suckers of Apple-trees, made use of as stocks to graft in, are apt to produce suckers. Suckers should never be used for stocks, but if they are, they should be taken

from trees producing the fewest. To clear suckers from orchard trees they should not be cut off, for new shoots will spring from every stub left. The right way is to keep the ground smooth, mellow and clean; and then, about the middle season of growth, or during the first half of summer, put on thick cowhide boots, and stout buckskin mittens, seize one sucker at a time, placing the boot upon it close to the tree, give a sudden jerk with the hands, and it will be torn out root and branch leaving no stump. An occasional repetition of this process will keep the orchard clear. Suckers always give a slovenly appearance to an orchard, and should not be suffered to grow. They also favor the depredations of the borer. — *Country Gentleman.*

A New Blackberry. — The Russian River *Flag* says: Eld. Richard Corbaley has a rare native Blackberry, which he has cultivated and greatly improved. It is about two weeks earlier than the ordinary wild variety of this locality. The fruit resembles the Dewberry, but has the flavor of the black-cap Raspberry. Mr. Corbaley has about 60 stools of this variety in bearing, and from present indications will be able to plant quite extensively next season. It is his purpose to cultivate this variety for market. The berry is fair sized and very firm—qualities which will add to its value for shipment.

To Preserve a Bouquet.—The *American Artisan* says: "When you receive a bouquet, sprinkle it with fresh water; then put it into a vessel containing some soap suds, which nourish the roots and keep the flowers as good as new. Take the bouquet out of the suds every morning and lay it always in fresh water, the stock entering first into the water. Keep it there a minute or two, then take it out and sprinkle the flowers lightly by the hand with pure water. Replace the bouquet in soap suds, and the flowers will bloom as fresh as when first gathered. The soap suds need to be changed every third day. By observing these rules, a bouquet may be kept bright and beautiful for at least one month, and will last longer in a very passable state; but the attention to the fair but frail creatures, as directed above, must be strictly observed, or 'the last Rose of summer' will not be 'left blooming alone,' but will perish."

Tree Wash. — The following is the recipe for a wash for orchards, used by Wm. Saunders, of the government gardens at Washington: Put half a bushel of lime and four pounds of powdered sulphur in a tight barrel, slaking the lime with hot water, the mouth of the barrel being covered with a cloth; this is reduced to the consistency of ordinary whitewash, and at the time of application half an ounce of carbolic acid is added to each gallon of the liquid. Mr. Saunders says: "I generally apply it in the spring before the leaves make their appearance, but I am convinced that it would be more effective if applied later, but then it is so difficult to do so when the tree is in foliage." Apply to trunk; it will not hurt the branches or foliage if applied to them also.

Rosewood.—It has puzzled many people to decide why the dark wood so highly valued for furniture should be called Rosewood. Its color certainly does not look much like a Rose; so we must look for some other reason. Up-

on asking, we are told that when the tree is first cut the fresh wood possesses a very strong, Rose-like fragrance—hence the name. There are half a dozen or more kinds of Rosewood trees. The varieties are found in South America, and in the East Indies and neighboring islands. Sometimes the trees grow so large that planks four feet broad and ten feet in length can be cut from them. These broad tops are principally used to make the tops of pianofortes. When growing in the forest the Rosewood tree is remarkable for its beauty; but such is its value in manufactures as an ornamental wood, that some of the forests where it once grew abundantly now have scarcely a single specimen. In Madras the Government has prudently had great plantations of this wood set out, in order to keep up the supply.

Bananas.—The San Diego *Times* says: Mr. J. M. Asher, of the Fruit Vale nursery, has just received five barrels of the Cavendish dwarf Banana bulbs from Florida. This Banana has been domesticated twelve years in Florida. It comes from middle China, and is well adapted to this climate, having been already tested at different places in Los Angeles county. Colonel Whitner, the "Banana king," says: "If frost-bitten the first year they will spring from the root and bear fruit the second year." Mr. Asher will dispose of a part of these bulbs, and it is desirable that their culture should be tested in different parts of the county. There is little doubt of their success and their introduction and successful culture in this county. They require to be planted four feet apart; after they start give water, manure, and attention *ad libitum;* plant two inches under the ground, in rich soil.

Recipe for Crystallizing Grasses.—One pound of alum, pulverize and dissolve in a quart of water; but do not let it boil; pour the solution into a deep earthen jar, and let it stand until about blood warm. Fasten your grasses with strings to a stick laid across the top of the jar, set away in a cool place where they will not be disturbed for twelve hours, then take them out and let them drain. For blue crystals use indigo or washing blue; for yellow, boil a few saffron leaves in a little water, and mix it with the alum water; for pink or red, use Prussian red—the more you use the brighter the color. The solution may be heated over and used until all the alum is gone. Be sure and have your grasses perfectly dry before putting them in the water. Press some green and autumn leaves to put in your bouquets. Some Bitter-sweet berries, if you can get them, will be quite an addition.—*Indiana Farmer.*

Staining Growing Wood.—Professor Stebbing, in a letter to one of the photographic journals, declares that, ere long, we shall be able to have all our furniture—even articles of common deal—of such a beautiful color as to throw out of fashion mahogany and other foreign woods. A Frenchman has discovered a new method of compelling the tree to color itself. He operates upon it at the moment when the sap is rising after its winter repose to give life and vitality to the branches. He introduces a chemical (how?) into this vivifying agent, and it distributes the coloring composition through every pore and fibre of the tree! When the coloration is terminated the knots and veins contain such a multitude of shades, harmonizing one with the other, that furniture made of it has at once a strange and fascinating appearance.

A Simple Disinfectant.—One pound of green copperas, costing seven cents, dissolved in one quart of water, and poured down a water-closet, will effectually concentrate and destroy the foulest smells. On board ships and steamboats, about hotels and other public places, there is nothing so nice to purify the air. Simple green copperas, dissolved in anything, will render a hospital, or other place for the sick, free from unpleasant smells. In fish-markets, slaughter-houses, sinks, and wherever there are offensive gases, dissolve copperas and sprinkle it about, and in a few days the smell will all pass away. If a cat, rat, or mouse dies about the house, and sends forth an offensive gas, place some dissolved copperas in an open vessel near the place where the nuisance is, and it will purify the atmosphere. *Then*, keep all clean.

Bulbs after Flowering. — When bulbs, such as Hyacinths, Crocus, etc., have been flowered in water, they should, as soon as the flowers begin to fade, be removed and planted in earth, where they will get a little nourishment. Even then the bulb is much weakened, and it is useless to try to flower bulbs in water twice. All bulbs with annual roots, which includes pretty much all but the Lilies, can be taken up as soon as the leaves become ripe and brown, and be stowed away without the least injury to the flowers of the next season, because the roots will die if the bulbs are allowed to remain in the ground. After taking them up, allow them to dry in the shade for a few days. Then remove the tops, roots, and rough skin, and put them away in paper bags, properly labeled, in a cool place in the house until planting time in the autumn.—*Vick's Floral Guide.*

Tree Mignonette.—This is by some supposed to be a distinct variety from the common kind grown in the garden, but it is not. The tree form is due to careful pruning and attention, and there is no variety of Mignonette which will assume a tree form without constant care. The way to raise a "tree" Mignonette is to sow the seed as usual, and when the plants are about two inches high, select one of the strongest, and plant in a pot or box by itself, and keep it well supported by a stake. Every side branch that appears must be pinched off, but the leaves must be allowed to remain on the main stem as they are needed for the health of the plant. When the plant is about a foot or more in height, the side shoots may be permitted to grow, but they must have their heads pinched off occasionally to force them to form a bushy top. It will take some months to accomplish this, but it will make a beautiful plant.

METEOROLOGICAL RECORD,

For the Month ending June 30, 1876.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 18 Market Street.)

BAROMETER.

Mean height at 9 A. M.	30.05 in.
do 12 M.	30.05
do 3 P. M.	30.04
do 6 P. M.	30.04
Highest point on the 7th at 12 M.	30.17
Lowest point on the 27th at 12 M.	29.89

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	66°
do 12 M.	72°
do 3 P. M.	72°
do 6 P. M.	66°
Highest point on the 12th at 1 P. M.	95°
Lowest point on the 4th at 9 A. M.	57°

SELF-REGISTERING THERMOMETER.

Mean height during the night	51°
Highest point at sunrise on the 13th.	64°
Lowest point at sunrise on the 4th	45°

WINDS.

North and north-west on 3 days; south-west on 4 days; east and south-east on 4 days; west on 19 days.

WEATHER.

Clear all day 18 days; cloudy all day 3 days; variable on 10 days; rain on 1 day.

RAIN GAUGE.	Inches.
20th	0.02
Previously reported	25.99
Total for the season	26.01

MISSION OF SAN LUIS OBISPO.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. VI. SAN FRANCISCO, AUGUST, 1876. No. 8.

FLORA OF JAPAN.

[CONTINUED.]

The forest trees principally consist of large Elms, which have the appearance of *Ulmus campestris*, so very common north of Europe. This tree attains a large size, averaging about four feet in diameter, and is most valuable for building purposes. A large area is covered with deciduous Oak, consisting of *Quercus serrata;* the beautifully leaved *Quercus dentata*, with a third kind. A large Ash, growing about 100 feet high, is a very striking feature. Also, numbers of large Walnut, which is cut up into boards, and used for insides of buildings, where it is considered handsome. Large Magnolias and *Cercidiphyllum* grow abundantly. There is a representative of the Snowball family, *Viburnum phlebotrichium*. Also, *Sophora Japonica*, with a tree like a Syringa. There is an Elm, from which is made a strong fibre woven into a kind of cloth, which is much in use. For dyeing yellow and red they have a species of Ash and Alder. They have three kinds of Birch, one used for torches, and the other for fastening together boards of boats. Two kinds of Linden are very conspicuous. Coniferous trees grow only on the high elevations. They consist of two kinds. On the borders of streams there are three different kinds of shrubby *Viburnum*. A large Lily of peculiar appearance forms, together with the *Lilium giganteum*, a separate section of this genus, as it differs from other Lilies. It is frequently found in swampy places. Its leaves are very large, and its flower stalks very often attain a height of ten feet or more, bearing large flowers of a greenish white color outside; the inside is pure white, with purple spots at the base of each petal. It propagates solely from seed. According to Siebold's *Flora Japonica*, it is *Lilium cordifolium*. There are several handsome herbaceous *Spiræas*, one bearing red berries, another with white flowers about six feet high. Under the shade of trees there grows a Campanulacea of climbing habit, with flowers resembling a diminutive Cobœa —*Campanulacea lanciolata*. There are in the mountains a number of terrestrial orchids—Cypripedum, Epipactis, Liparis, and other small, evidently interesting species. In Ferns the woods abound with a very large smoothed leaved Scolopendrium. A climbing

Hydrangea, the Schizphragma, the Ampelopsis, a kind of Virginian Creeper, and Vitis labrusca, the wild Grape, as well as an Actinidia with edible fruit (Kokuwa), are here frequently met with. There is a very common herb, a Plantago. The forest trees principally consist of Maple trees, of which there are at least three kinds. One is a Sugar Maple. The Mistletoe is found abundantly on some of the Oaks. Shallow ponds of some extent are formed in the woods, and possess a vegetation of their own. Rushes and small Ferns and the blue flowering Pontederia are the principal occupants of these moist localities. The deeper ponds are covered with the leaves of *Nymphœa tetragona*.

THE TRANSFORMATION OF INSECTS.

BY ENTOMOLOGIST.

When the great increase lately of noxious and destructive insects in California is considered, some knowledge of their appearance and habits becomes very important to the horticulturist and farmer. The advent of the nest and other caterpillars among our orchards and shade trees, such as our Oaks especially, which for two or three years past have swarmed in immense quantities, renders it very desirable that we should all know something concerning them. (The Live Oaks in Napa Valley this spring were covered with these pests). We will, therefore, present to our readers a description of the operations and transformation of this class of insects. The metamorphoses of caterpillars and other races of insects offer some of the most curious and wonderful of nature's phenomena for study and contemplation. The degree of change or metamorphosis is very different in different groups of insects. In its most complete form, as exemplified in the butterflies, moths, beetles, and many other insects, the transformation takes place in three distinct changes. In the first, which is called the larva state, the insect has the form of a grub, sometimes furnished with feet, as in the nest caterpillar, and sometimes destitute of those organs. Different forms of insects in this state are popularly known as caterpillars, grubs, and maggots. During this period of its existence, the whole business of the insect is eating, which it usually does most voraciously, changing its skin repeatedly, to allow for the rapid increase in its bulk; and after remaining in this form for a certain time, which varies greatly in different species, it passes to the second period of its existence, in which it is denominated a *pupa*. In this condition the insect is perfectly quiescent, neither eating nor moving. It is sometimes completely inclosed in a horny case, in which the position of the limbs of the future insect is indicated by ridges and prominences; sometimes covered with a case of a softer consistence, which fits closely round the limbs, as well as the body, thus leaving the former a certain amount of freedom. *Pupæ* of this description are sometimes inclosed within the dried larva skin, which thus forms a horny case for the protection of its tender and helpless inmate. After lying in this manner, with scarcely a sign of life, for a longer or shorter period, the insect, arrived at maturity, bursts forth from its prison in the full enjoyment of all its faculties. It is then said to be in the *imago* or perfect state. This metamorphosis is one of the most remarkable phenomena in the history of insects, and was long regarded as perhaps the most marvelous thing in nature; although recent researches have shown

that the history of many of the lower animals presents us with circumstances equally if not more wonderful; nevertheless, the transformations of the higher insects is a phenomenon which can not fail to arrest our attention. To see the same animal appearing first as a soft, worm-like creature, crawling slowly along, although some of them can travel quite fast, and devouring everything of vegetation that comes in its way, with the exception of some kinds of plants, and then, after an intermediate period of death-like repose, emerging from its quiescent state, furnished with wings and painted plumes, adorned with brilliant colors, and confined in its choice of food to the most delicate fluids of the vegetable kingdom, is a spectacle that must be regarded with the highest interest, especially when we remember that these dissimilar creatures are all composed of the same elements, and that the principal organs of the adult animal were in a measure shadowed out in its previous changes.

Nor is the singularity of their natural history the only claim that these insects have upon our attention. Lowly as they seem in point of organization, there are few animals that exceed them in commercial importance. The finest dyes known to our manufacturers are derived from insects. We have not space to enumerate even a few of them, but of all secretions peculiar to insects, *silk* may well be regarded as the most valuable. The fluid, before it comes in contact with the air, is viscous and transparent in the young larva or worm, but thick and opaque in the more mature. It is found, by chemical analysis, to be chiefly composed of bombic acid, a gummy matter, a portion of a substance resembling wax, and a little coloring matter. Silk may be placed in boiling water without undergoing any change; the strongest acids are required to dissolve it; and it has never yet been imitated artificially. A great variety of scents, which from their agreeable odors are much used in perfumery, are manufactured by insects. That substance or gut-line used by anglers is made from the organ which secretes the silky matter for the purpose of forming the cocoon. The caterpillar of the silk worm, at a certain age of its existence, spins around it a fine silken cocoon (the silk of commerce), in which it passes the pupa or chrysalis state, preparatory to its issuing again into a winged moth. Now, just previous to the commencement of this cocoon, which may be known by the worm ceasing to eat, and while the body of the grub is replete with the silky secretion, they are killed by a momentary immersion in boiling water; and on laying hold of each extremity, and pulling the body of the grub moderately, it will generally separate near the centre, and disclose to view a greenish, white-colored gut, which is not an intestine or entrail. This gut-like organ is taken by the extremities, and gradually extended until the requisite length and tenuity are obtained, when the ends are wound round wire pins fixed along each side of a board of the proper width; then exposed to dry and consolidate in the air and sunshine. Of course the greater the extension, the longer and finer the lengths of the gut will be. Gut ought to be as round and smooth as wire. Gut of this description is incredibly strong compared to its dimensions.

The well known plant, *Spartianthus junceus*, has lately been utilized in the south of Europe in the manufacture of textile fabrics, and has been found suitable for the finest cloths.

VASES AND VASE PLANTS.

BY FLORIST.

The introduction of vases, tazzas, baskets, rustic wood basins, stumps, etc., either of worked stone, or the various imitations of it, of porcelain, of wire, iron, and other materials, have now so general an introduction into garden scenery, more especially into those laid out in the geometric style in cities and other rural seats and places, that a few words on the position they should occupy, and the plants most suitable for placing in them, may not perhaps be unacceptable to the readers of the HORTICULTURIST.

In gardens designed to form an architectural adjunct to the mansion, and which should, therefore, be carried out agreeably with the order which characterizes the principal building, vases, etc., will form a considerable feature, and are indispensable to relieve the sameness of long lines of low walls, fences, and balustrading, and when in due proportion to the size of the pedestals on which they are placed, and filled with suitable plants, form elegant objects, in addition to breaking up horizontal lines of masonry or wood work. In all architectural gardens, either in connection with the mansion or assuming that character when detached, vases and their accompaniments are appropriate embellishments, both for surmounting pedestals on low walls and for introducing into the component parts of the design, where they may be arranged either for centres or to occupy subordinate positions in the compartments devoted to flowering plants. Neither do we know of anything which conveys so much of the truly ornamental as vases, when placed at intervals on each side the long gravel or grass walks prevalent in this style of gardening. In all cases, the vases should be large enough to hold sufficient soil to keep the plants in health; and the pedestals on which they are mounted should be strictly in keeping with the character of the vase. We prefer vases rather large than the reverse, for we must enter our protest against the miserable dished-up plants which are sometimes seen struggling for existence, for want of water and earth to grow in.

But it is not solely for the terrace or formal garden that vases are appropriate; there are many situations in scenery purely English in style of landscape gardening (or in the natural form), where vases may be introduced with the happiest effect; for instance, at the junction of gravel or other walks, or where these latter are compelled to terminate abruptly, a vase or seat affords a suitable excuse. The angles formed by the sudden sweep of a walk, and corners not otherwise filled up and backed by masses of planting, are positions which first occur to us as affording sites for vases in natural scenery, where their introduction will not offend the eye of taste. On the contrary, these should never be placed in open parts of the lawn or grass plot, where their isolation from architectural accompaniments would be manifest, and where, besides, masonry in any form would interfere with *repose* and *breadth*, both essential features in this style of gardening. It follows, then, that in natural scenery, either real or imitated, vases should be placed in immediate connection with gravel walks, which will form a kind of base for them, or at no great distance therefrom; or only where their employment as objects to fill up otherwise vacant places, affords a reason for deviating from the general rule; and on no account should they be placed as single

objects on lawns unconnected with masonry or walks.

Having given our ideas on situations, we will point out what we consider the most suitable plants for filling them. On this point much misconception exists, and we know that gardeners are often compelled to fill vases, etc., with plants by no means the most eligible for the purpose; but as custom has made it somewhat the law, we merely notice it for the purpose of pointing out what we consider would be an improvement on the prevailing practice of merely filling them with Geraniums of all colors, and other unsuitable but showy plants, and which we admit produce a blaze of bloom, but which, in point of grace and elegance, must certainly yield to many others.

Considering a vase, when tastefully planted, as one of the most graceful and classic objects in the flower garden, we should select such plants, which, from their habit of growth, will harmonize best with the situation they are to fill. Nor does it require very expensive plants to create such a beautiful combination of form (if not of color), having seen a vase filled with common Ferns produce a most charming effect; and those who grow exotic Ferns will readily perceive what elegant groups they would make, if transferred to a vase. But we must try and see if there is nothing else that will well answer our purpose. First, there is a plant, *Agapanthus umbellatus* —the blue African Lily and its allies. Good plants of these transferred in April or May, and well supplied with water (for the plant is a sub-aquatic), form fine objects. Their sword-like and peculiar broad and round-ended leaves bend gracefully over the rim of the vase, and, crowned with umbrels of bright blue flowers, render them as conspicuous as they are graceful and imposing. Next, we have *Tritonia aurea*, and certainly this is a beautiful plant for the purpose; it requires putting in thick; but its bright orange-colored flowers and slender leaves make it a very desirable plant for the purpose. *Phormium tenax* (New Zealand Flax), fine specimens of which may be seen in the post office grounds in this city, is another suitable plant, for its foliage (its flowers are not strikingly beautiful), although it requires a very large vase, as in time it grows to an immense size. Some of the Yuccas are also very suitable. As regards these latter, the best plan is to select those showing bloom, when they are really splendid objects, with their cream-colored, bell-like flowers all along the stems. There are many other sword-leaved plants, including Irises and the Century Plant, particularly the golden-edged leafed one, well adapted for our purpose. Nor should we forget the Acanthus, for their classic association, which, to those who may wish to make the trial, will suggest themselves as eligible; and we shall be glad to hear that these hints, loosely thrown together, may induce some to select them, and obtain some of these vases, now so varied in shape, although there are many other nice plants, both large and small, which are quite, and, perhaps, more suitable. We will now name a few creeping plants adapted for planting round the principal; these will creep over the rim, and may then be left either to grow in their own way, or to be trained so as to form festoons round the base, such as Ivy, etc., *Lophospermus*, two or three kinds, *Maurandyas*, blue, red, and white, *Tropœolum pentaphyllum* and *speciosum*, *Calystegia pubescens*, *Lysimachia nummularia*, white (Loose-strife), *Campanula fragilis*, *Lobelius Erinus* and *unidentata*, and now many other newer

plants are used, and are useful and very ornamental for small vases and baskets. But for these latter there are many plants peculiarly well adapted. We will here name a few: *Coleus verschaffeltii*, *Centaurea candida*, *Sedum Sieboldii*, *Lobelia Erinus*, *Paxtoni*, *Achyranthes Gitsonii*, *Alyssum dentatum variegatum*, *Alternanthera spathulata*, *Pyrethrum* (Golden Feather). These are rather upright plants. For drooping plants: *Vinca elegantissima aurea*, *Cerastium tomentosum*, *Convolvolus manritaniens*, *Solanum jasminoides variegatum*, *Punicum variegatum*, etc. Moss should be spread over the bottom and sides of the basket, so as to hold the water as long as possible.

Correspondence.

FLOWER GARDENING.

Santa Barbara, July 22, 1876.

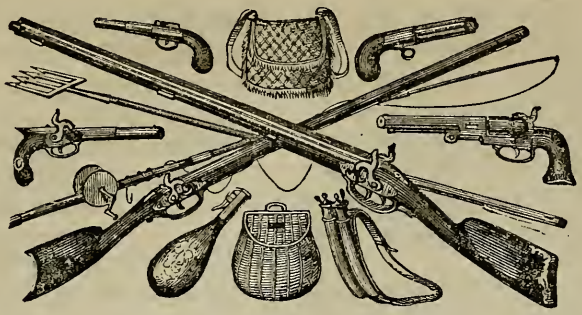
Editor Horticulturist: — Thinking some of my experience in my flower-garden may please some of your readers, I will give you what occurs to me now, and if you find it of any use, will occasionally send little items. Reading an English paper to-day, I see they recommend a free use of wood ashes well spaded into the soil as a fertilizer. I used them so a year ago, and lost a very valuable plant.* Roses will thrive, and be greatly benefited by their use, but I do not find them so around other flowers. Sand, iron scales, and soot I use for all other plants, and have never found it to injure anything; while no one can show finer Rosebuds or healthier foliage, finer Carnations, Fuchsias, or Heliotropes. About every three months I give each plant about two quarts of liquid hen manure, the color of tea, and plenty of water (a good soaking, by letting the hose lie on the flower borders, and water running slowly for twelve hours), then, as the surface begins to dry, pass a rake or push a hoe over it, which also loosens and helps to remove the weeds. Flowering plants grow here winter and summer, if given a fair chance—such Pond Lilies, Cape Jessamines (I don't fancy the name Gardenia), Bouvardias, etc. Mine bloom every month in the year, and I cut plentifully from *Davidsonia* all last winter. We had a Tuberose stalk forty-five inches at New Year's morn, with thirty blooms on it and one open. White Heliotrope and the very dark shade bloom continually. Bouvardias will grow in a sunny spot with the same culture that a common Geranium requires, if, after removing it from the crock, it is never allowed to get dry; and if taken from a glass house it should be partially shaded a week or more.

I am now experimenting with *Passiflora princeps*. I turned it out in the flower bed last September, and it made but little growth. During December it lost all its leaves, but is now growing quite vigorously, although I do not expect it to bloom this summer. It is a little shaded by being too near a large running Rose, and in December next I shall move it to full sunshine and give it a sandier soil (made to order), as our soil is very heavy and needs much careful culture. Another beautiful flower that is seldom seen out of a glass house, though as easily cultivated as a Rose, is *Tecoma jasminoides*. It would not perhaps stand much frost, but lovers of new flowers in Southern California can have the pleasure of growing it.

Mrs. G. E. Childs.

* The ashes should have been leached.—Ed.

Texas may claim the championship for huge watermelons, fifty-pounders being no rarity in that State.



Rod and Gun.

SPORTSMEN'S CLUB OF CALIFORNIA.

This club, whose career commenced quietly but very auspiciously, will unquestionably take a leading place among the sterling institutions of California. Its objects, which are, fundamentally, the preservation of fish and game from the marauders who of late years have, with seeming impunity, been systematically violating the game laws, are such as commend it not only to all true sportsmen, but to the whole community. That such an institution has not been organized in San Francisco long ago is to us matter of much surprise, especially in view of the fact that in the leading cities of the Eastern States institutions of a kindred character have for many years past been in active and eminently successful operation. Of course, the Sportsmen's Club of California depends for its membership, as all such clubs do, on those gentlemen who are lovers of the royal sports of the field and the stream. It was in the month of February last that some fifteen or twenty such met, in a quiet way, to talk over the question of starting the club, a task which was resolved and immediately entered upon, and found very much easier of accomplishment than was anticipated. The club's charter members (who consisted of such gentlemen as were invited by the prime movers to join it) soon numbered sixty-eight, and the subscription books were then closed, it being resolved that future applicants for membership should be voted on in the same manner as in other clubs. At the first regular meeting of the members, on May 2d, no fewer than sixty-two candidates were voted for and elected. At the meeting in June fifty more were added to the list, in July six, and in August five. Of the number two are life-members, and the total membership in good standing at the present time is about one hundred and sixty, which includes many of our most prominent and respected citizens. This is a wonderful showing, and a remarkable progress in so short a time. The club's financial condition is equally satisfactory, there being at the end of July nearly $2,000 in the treasury, and no debts to pay.

But in addition to its being a conservator of the game laws—seeing that they are properly enforced and that violators of them are brought to punishment—the club has several valuable fishing preserves and kindred advantages for the exclusive benefit of its members. Its fishing preserves include those of Lakes Merced, Pilarcitos, and San Andreas, all of which are leased from the Spring Valley Water Company at a reasonable figure. At Merced there is a comfortable club-house, with sleeping accommodation for sixteen persons, and

in each of the lakes there are numerous boats, all for the use of members only. We know of no more beautiful trip anywhere than to Pilarcitos, and the disciple of Izak Walton can in a few hours' fishing be amply rewarded, both there and in Lake San Andreas, with scores of as pretty trout as ever bore the mark of St. Peter's thumb.

The club is about to become an incorporated body, and when it does become such we feel well satisfied that it will add further to its swelling membership. When winter comes on, it is more than probable that the members will secure for themselves handsome club-rooms in the city, where in social converse they may while away an hour or two in the long evenings, recounting, as some of them can, many a "hair breadth 'scape" from a full-grown grizzly; also, when not fierce grizzlies, but some less savage or more gentle game was hunted; or telling, with a gusto that belongs only to a sportsman, of how the deer and quail had "come down" to the crack of some time-honored rifle or more modern breach-loader; or how the trout, that had eluded the snares of a thousand artful "flies," had at length yielded to the skill and rod of the narrator.

An important meeting of the members of this club was held at the Secretary's office, 113 Leidesdorff Street, on Wednesday, 9th instant, for the purpose of receiving a vote as to whether or not the club should become an incorporated body. Mr. William Ward efficiently acted as Judge of Election. The polls were open from 9 A. M. until 4 P. M.; the result of the vote was as follows: For incorporation, 88; against incorporation, 1. The following gentlemen were elected the first Board of Directors under the new Constitution: Richard L. Ogden, W. W. Traylor, Alexander Weed, W. P. Willard, and Arthur M. Ebbets.

FLY DRESSING A DESIRABLE ACQUIREMENT.

BY PISCATOR.

The following articles are indispensable in dressing trout and salmon flies:

1. Hooks of all sizes, Limerick or round-bend.
2. Silks, plain and floss, of all colors and shades (fine for trout flies).
3. Gut and hair, natural colored and stained.
4. Gold and silver tinsels, and threads of various sizes.
5. Fine-pointed scissors.
6. Needle for dividing wings.
7. Tweezers or nippers.
8. Vial of spirit varnish.
9. Shoemakers' wax, and white wax for trout flies (see recipe).
10. Dubbings of all colors, pig's bristles, mohair, wools and worsteds of all colors, squirrels' fur and tail, mole's fur, water rat's fur, hare's lug, combings of cow hair, monkey's fur, camlets, martin's fur, fox's lug and breast fur, etc.

The necessity of using artificial flies undoubtedly arose from the inability to use such small insects in their natural state. Fly-making is a delicate and minute mechanical process, which is but imperfectly described by the best written instructions, and which can only be effectually learned by imitation, as the making of a coat or a shoe, etc. Let the angler get some friend who understands fly-making to give him but one lesson in the craft, and the following instructions, carefully carried out, will complete his education, and renhim an adept in the art.

To dress a fly, which shall imitate

the colors and form of the insects to be represented sufficiently well to deceive the quick-sighted and wary trout, is an art most delightful in practice, and one which very materially tends to the otherwise doubtful success of the fly-fisher. I would recommend every person desirous of having sport to endeavor to attain the knack of dressing them neatly and speedily. Experience proves that trout feed eagerly for hours on one kind of fly, and that they will suddenly desert their late favorite for another species, though the former may still be in great numbers on the water. Such caprice can not be accounted for, and should be met by the angler in the best way he can. Consequently, many people hold, and rightly think, that one or other of the natural flies which are on the water at the time, and on which the trout are feeding, is necessary to be used in order to fish successfully. In order, therefore, to provide himself with a proper fly, the angler frequently finds himself compelled to sit down by the water side and dress the new favorite, since it can not be expected that he will be able to keep all kinds ready dressed in his book. Necessity, then, may be said to urge every fly-fisher, who is desirous of having sport, to acquire the art of fly-dressing.

The pleasure of collecting, arranging, and endeavoring to match the colors and form of nature by aid of his materials, is infinitely greater to the fly-dresser than can be conceived by an indifferent observer, and offers a constant employment for those leisure hours, which in unfavorable weather might hang heavily on his hands. Indeed, I can promise that if he gets interested in the work, he will not only devote many an hour to it, but will find comparatively as much pleasure in building one of his "killers," as the painter or sculptor has in giving expression, upon canvas or on stone, to those fancies that charm the eye and intellect of every admirer of art.

The materials for this purpose having been already described, the next thing will be to show how they are to be applied properly to the different methods of fly-dressing.

Nothing is of more importance in this branch of the art than *correctness in color and size;* and next to this is neatness of formation. The exact color can be obtained only by wetting the materials and comparing them in that state with the color of the natural insect; then form and size must have your best consideration. If you do not wet your materials previous to making, always select colors two or three shades lighter than the natural fly to be imitated, because they turn darker in the water. Feathers for the palest blows or duns can hardly be too light in color or fine in texture; consequently, for dressing such flies those of the dotterel are invaluable.

The artist must ever have before his eye the faultless child of nature, and in imitating objects so small and wonderderfully formed, with their rare beauty of color, he will have no easy task, and, at best, will build but a clumsy representation. Nevertheless, he must not be disappointed if his early efforts are not so neat as he could wish; practice in every art makes perfect; that is, so far as human perfection is attainable. Whether a hackled or a winged fly is to be manufactured, it is essentially requisite that the whole of the materials which are to compose the imitation should be properly adjusted before he commences operations.

Always use the softest hackles for the legs, those of a hen are best, though the small head and neck feathers of the

quail, snipe, sand-piper, killdeer, etc., are softer and answer better generally, used thinly. The hackles should be stripped or divested of the soft downy fibres which grow nearest the root, but if the feather or hackle be very small, it should only be turned back on both sides, ready for twirling or twisting on the hook. If of larger size, one side of the feather or hackle should be stripped off also. Now, the side to be so stripped off may be known by taking the feather between your left finger and thumb, with the outside uppermost, or toward you, then strip off the under side. Great care should be taken in selecting the softest, brightest, and most transparent feathers, in order that your imitation may approach as near as possible to the appearance of the natural insect, for stiff or harsh fibered feathers will not do this; also, that the feathers should have a fibre very little longer than the shank of the hook. Never, by any means, cut the thin ends of your feather, else your fly will be useless, but have it of proper length before tying on, except it be to represent a case-winged fly.

The gut, weed, or hair on which you are going to dress your fly, should next be carefully examined and tried by moderately pulling it, in proportion to the size of the fish it is expected to hold. If gut is much curled and stiff, drawing it over a piece of India-rubber will straighten it; be careful not to press too hard for fear of making it rough, and pulling fine strands off it. Taking the precaution to try his gut before using will save the angler much disappointment, and enable him to discover defects not discernible to the eye.

Your dubbings should be mixed to the exact color of the body of the natural fly which you are going to represent, and a small portion of it should then be wetted and held up to the light, or you may dress your fly too dark, since camlets, furs, etc., are several shades darker when wet than when dry, and in some instances have a totally different hue. For the same reason the floss silk which you use should also be lighter than the natural fly.

Next, the *hook* should be tried as to point and temper, and properly selected as to size. If it is a *winged fly* you are going to dress, the feather for the wing is to be stripped from the quill-feather of the bird selected, by an even but sudden pull in the direction of the quill; or you may cut off sufficient of the feather for your purpose with your scissors, keeping close to the stem of the feather. The downy part near the quill is always to be rejected. You should be particularly careful to have all the fibres even at the points, and as little ruffled as possible.

[TO BE CONTINUED.]

GENERAL REMARKS ON ANGLING.

BY ANGLER.

The skillful angler ought to find out at what times of the year and day fishes bite best in the water in which he intends to sport. In hot months it matters not where the wind is; but, if possible, fish against it, and have the sun opposite to you, casting to the shore or side of the river from which the wind blows.

He that angles with fine gut, and keeps out of sight, will take more fish than he who angles with strong tackle or in sight, and especially if wading and using his landing-net properly. Fishes have had eyes, ears, and nostrils given to them; consequently regard should be paid to all these faculties. The Creator has made nothing in vain.

When you rise a fish, or have a bite, be sure to strike uprightly and quickly, but not too hard.

When fish bite best, observe the age of the moon; what kind of night preceded, as to windiness, darkness, or lightness; whether starlight or moonlight, or both; what kind of a day it was all day long; what temperature of air and water; what month, and what day of the month; what hour of the day; and what flies or baits were taken best, etc. Keep a book for this purpose to make these notes in.

Do this in order that, upon deliberation, sound judgment, and experience, and from the true nature and causes of things and their circumstances, you may be able to draw conclusions for your improvement in the art of angling. "He is fortunate who can find out the true causes of everything."

All scaly fish swim in schools or shoals, and often mix company. When fish of any sort are hog-backed and small-headed, they are in the best season.

Open the first fish you catch when fly-fishing, observe the color of the flies he has taken, and fit up your tackle accordingly.

All fish that take flies sometimes take them the best on the top, sometimes best a little under water.

In the day fish chiefly seek their food by sight; in the night by smelling; so fish accordingly, though some writers say they see equally as well in the dark as the light.

There is generally no use in angling for large fish the next day after a dark or windy night, unless the evening of that day be cloudy or windy; for in dark or windy nights the best fish feed most, and glut themselves, and consequently will not bite so soon after.

Fish bite badly the same day there has been a sharp frost, unless in the evening it be fresh weather again.

Fish rise or bite badly when there is any rubbish in the river where you fish.

The best time for angling, between the first of April and the first of June, is from sun-rising till twelve o'clock, and from two to six o'clock; between the first of June and the last of August, from before sun-rising till ten o'clock, and from three to eight, or all night, when the weather is fine (but this is unsportsmanlike); and from last of August to the last of October, from sun-rising till twelve, and from two to six o'clock.

Fish generally bite well in dark, lowering, close, warm, gloomy weather, or in a gentle whistling wind which curls the water, or in fine soft misting rain or dew, or after a sudden smoking shower.

When the night proves light, and the next day dark and windy, and the water is in condition, you are likely to have good sport, for the best fish stir no more in light nights than in bright days.

From Michaelmas till April fish bite best in the warmer part of the day, in the deeps at the bottom, the air being clear and no wind stirring; after April, the colder the day, fish nearer the bottom; the hotter the day, the nearer the top.

Most fish, in most places, bite earlier in a mild, warm, forward spring, than in a cold, backward one; and later in autumn, as the weather is hotter or colder; and, both spring and autumn, earlier in a warm day than in a cold one, and in the sunshine better than in the shade.

In exceedingly cold weather in the spring, use the smallest blows and gnats, if the water be clear; and the clearer and smaller the water, the less must be your flies.

In summer all fish bite keener and better in swift, rapid, stony, gravelly rivers, than in such as run gently, and have slimy, muddy bottoms.

When you fish in thick, large, or dark waters, use a large-bodied fly; when in small, clear streams, the smallest flies ought to be used.

In a thunder storm never seek the shelter of any tree, for all trees act as conductors. The most open ground is the safest.

FISHING ON KERN RIVER.

From Mr. Kennedy, one of the pioneers of the county, who is devoting his time to the enjoyments he neglected during a long business life, we get a few particulars of the trout fishing on the upper waters of Kern River. The route from Kernville is up the north fork of the river to near the Bunnel mine. The way to that point may be by wagon, and thence up the river it is necessary to go on horseback. Pack animals can be obtained there, and riding animals if required. The fishing begins about four miles beyond that point, and is fine sport for an almost indefinite distance further up into the mountains. Good camping ground may be had at different points along the river. Mr. Kennedy, who has just returned, says the party caught about two hundred pounds of brook trout, but the season was early. He proposes to return in ten days, and expects to find more fish and milder weather. The nights are cold compared with the valley, but probably no more so than the nights on the top of Mt. Breckinridge, where there was frost every night until the first of June. Both the south and north forks of Kern River abound in trout. The Wheeler Expedition, which spent some weeks along those streams last year, reported the finest fishing they had enjoyed since the beginning of their explorations in the Indian Territory. They reported a catch by the company of one thousand pounds in one day, many weighing four pounds. It has been said by sportsmen who have fished in the waters of California and Oregon that no genuine speckled trout are to be found. A friend, who loves the hook and line and fly better than good health, took his way to the remote tributaries of the Columbia River, and sought in vain for the speckled tribe known in the mountain waters of the Eastern States. But quite as enthusiastic fishermen insist that the only variation is one of climate, and is peculiar to other classes of fish found in the sea. In any event, whether the spots are genuine or not, no one who has ever once tried them can forget the feast, and the luxury would tempt the appetite of the most fastidious of anglers. No one, who is near enough to see the waters of the Rio Bravo emerging from the grand old mountains, should fail to give a few weeks to the sport they afford.

OUR MARKSMEN AT PHILADELPHIA.

Advices from the East show that in the rifle shooting matches at Philadelphia the California marksmen are giving an excellent account of themselves. The team is composed of Philo Jacoby, A. Strecker, William Ehrenpfort, J. A. Bauer, A. Rahwyler, A. Koenig, J. A. Steuli, and Mr. Greiner. Thus far the honors are as follows: On the target of honor Streuli took the seventh prize. On the festival man target Jacoby took the fifth and Rahwyler the seventh prize. On the goblet target Ehrenpfort took the second goblet, Jacoby the fourth, and Koenig the eleventh. Greiner and Bauer also took goblets. At the bull's

eye target Strecker gained a prize for making the largest number during the day. In the shooting for the festival premiums Strecker stood second, Rahwyler came in third, Jacoby fourth, Ehrenpfort fifth, Streuli sixth, Bauer seventh, Koenig eighth. Jacoby gained a gold festival medal for making a second 25 bull's eyes at this target. In the shooting to determine the status of the teams in the prize match nine teams of seven men each entered, and the Californian team made the highest score—1,206 out of a possible 1,750 points. The Helvetia team came next, sixty-five points behind. Each man was allowed ten shots, and each shot counted twenty-five. Jacoby won a gold medal for making the best score in his team.

FISHING EXTRAORDINARY.

A party of San Francisco merchants, consisting of W. P. Fuller, W. F. Whittier, Ned Moore, and James Flood, have lately returned from a four days' fish on the McCloud River, where they enjoyed four days of successful sport. They brought back with them a large chest of Dolly Varden trout as the result of their angling. This species of fish resembles nearer the Eastern trout than any that have ever been brought to this city, and are found only in the McCloud and Pit Rivers. In two days they took one hundred and forty pounds, some of the trout weighing five pounds. They are described as the gamest fish ever found in California waters, half an hour being frequently required to subdue one of the large ones. The party went by rail to Redding, whence they were conveyed by stage to Sisson's. Here they were furnished a complete outfit by that genial old pioneer, including horses, fishing tackle, and a cook and guide. The only bait that would induce these trout to bite was salmon eggs. The river is literally alive with salmon and trout, and at this season of the year the trout are very destructive on salmon eggs. The fish were brought to this city on ice, and were pronounced by epicures to be superior to the Tahoe or Truckee trout.

Fish Culture.—Dr. Simms is preparing to enter upon fish culture on his farm near Santa Rosa. He has abundance of water, which will be conducted from the hills back of his residence to ponds, which will be provided for carp, California and Eastern trout, and any other rare fish that he may be able to obtain.

Shad in the Sacramento River.—One hundred and twenty thousand young shad were deposited in the above river at Tehama, by our energetic Fish Commissioners, Messrs. Reding and Throckmorton, of this city. They were generally in excellent condition, the loss being less than one thousand.

Selected Articles.

TREE PLANTING IN CALIFORNIA.

In California everything is done on a large scale if at all. Grape vines are planted by the hundreds of thousands, and Wheat fields extend to thousands of acres, and the groves of forest trees are what in the East would be called extensive forests.

Of late Californians have commenced the planting of forest trees, and this, too, upon the same extended scale which marks all their operations. The Blue Gum-tree at present being a general favorite, we are given an inkling of the manner of handling this tree, in a late number of the Los Angeles *Express*.

On the Laguna ranch, seven miles from Los Angeles, Mr. H. H. Spencer contracted with Col. R. S. Baker, to plant 75,000 Blue Gum (or Eucalyptus) trees in a field of 100 acres. Mr. Spencer secured a large quantity of seed from Australia, and planted it in boxes at his place on Hill Street. As soon as the plants began to shoot he transferred them to other boxes, placing them in exact and equal distant rows, with a view to transplanting them in the ground as he is now doing. Mr. Spencer invented a machine by which the tree is lifted from the box, with all the earth surrounding it, and injected as it were into a hole made by a similar machine in the ground where it is to grow.

Mr. Spencer's contract with Colonel Baker requires him to plant 75,000 trees. The ground was first plowed and then rolled. Five wells were sunk, one at each corner of the field and a large one in the centre. These are supplied with force pumps by which the water is raised into tanks. A fine quality of water is struck in each of these wells at a distance of about three feet from the surface. The grove is laid out with drives from the entrance, facing the county road, to each of the wells on the boundaries, and these are connected with avenues converging to the large central well. An open circle, about 120 feet in diameter, is left at this well, where the Colonel intends to lay out arbors and grounds for picnics, etc.

The trees are planted in rows running parallel with the county road. They are laid out in quincuncial rows, each quincunx of trees occupying a square of 12 feet. Thus a line 252 feet in length, marked out every 12 feet, is stretched and fastened to pegs. Men with spades then dip out a gutter of earth and sink a cross cut two inches from the line. This marks the exact spot where the tree is to be planted. Men then come along armed with the planting machines. They first take out a plug of earth about six inches deep and an inch and a half in width, with one of the machines which is without a tree; then they insert a planter containing a tree into the hole, push down the cylinder with the thumb, and, presto! the tree is adjusted in its place. Then follows a man with a heavy cast iron pounder, opened in the center and rounded at the end to a convex shape. The tree passes through the central aperture, the pounder is pressed to the earth, and when withdrawn the dirt is closely packed around the plant and left in the shape of a bowl. Then a man comes along with water and fills the bowl. Some time afterward dry sand is spread over the moisture surrounding the plant, and it is thus preserved from insects, which will not remain in dry sand, while the process of evaporation is retarded by this surface layer. We timed the men while they were planting a line of trees, and found that it took them just one minute and a half. At this rate they can plant 6,300 trees a day—that is, a gang of men consisting of seventeen, engaged immediately and incidentally in the work. The average is about 6,000 trees per day for such a force, so that from the time of getting fairly at work it would take about 13 days to plant the 75,000 trees contracted for. There are portions of the field where the process of planting is not so easy as that we have described. At some points the earth is baked almost hard to a considerable depth. Here auger holes are bored by men with the Champion post-hole auger, to a depth of about two feet, where moist soil is met. This hole is

filled with water from carts that are kept constantly moving between the tanks and the holes. The water soon softens the walls of the holes and disappears. They are then filled with a fine loam, and in this the trees are planted. This portion of the work is slower than any other, but a large gang of men are employed with augers, and rapid progress is being made. Trees which had been planted but one week were getting along vigorously.

TO RAISE SEEDLING STRAWBERRIES.

The process is so simple that we will describe it here for the benefit of such of our readers as take an intelligent interest in horticulture, and may have it in their power to attempt something in this direction. There are two rival species of the Strawberry, *Fragaria Virginiana* and *Fragaria grandiflora*. The first is our North American wild species, from which has been produced the American improved varieties. The second is the South American species, from which European horticulturists get their improvements. The North American plant produces fruit of great productiveness, and of a peculiar wild flavor, which makes it a favorite. It thrives best with us, also. The European varieties, from *Fragaria grandiflora*, are of great size, moderately sweet, but they have comparatively little aromatic flavor.

A horticulturist who desires to get a new and improved seedling berry, determines what qualities he desires to combine. He takes, for instance, a plant of Wilson's Albany, which is very prolific, with a berry of fair quality, but rather acid. He plants beside it a sweet variety of great size, but not very productive. His object is to let one fertilize the other, and thus combine the qualities of both. To secure his end he removes the stamens from the flowers of one as soon as they are open, and fertilizes these flowers with the pollen of the other. When the berries which are the result of this union are ripe, having prepared well a patch of ground, half shaded, he mashes the berries in his hand and mixes them thoroughly with dry sand sufficient to take up the moisture. The mixture he sows, and sifts over it an eighth of an inch of fine mold.

If the soil is kept moist the seeds will sprout in from four to six weeks. The young plants are covered lightly with straw the first winter, and next spring are transplanted into rows two feet apart and eighteen inches in the rows. All runners are stopped this first season, and the beds kept very clean. The next spring the plants bear; but their productiveness and quality can not be definitely determined till the year after. Then an inspection of the plants and fruit will enable the grower to determine on the one or two varieties out of perhaps five hundred or one thousand plants he has. Mr. Fuller states that, in his first venture, of about four hundred seedlings, he found not one worth keeping. But he has kept up a constant succession; has fruited and condemned from fifty to one hundred varieties every year for several years past; and has raised altogether about one thousand varieties from seed. Out of this number he has secured three new varieties which are superior.

Seedlings have a tendency to run back, and a plant which bears promising fruit in its first year may turn out small berries or a small crop the next. When they have been fruited three years and remain good they may be depended upon.

Though this seems a tedious under-

taking, it must not be forgotten that seedlings are all the time producing fruit of some kind, sufficient for use, and quite as good as the average berry in the market; and the zealous horticulturist has the hope before him that in the end he may originate some new variety which shall be superior to all its competitors.

HOW TO DRY PLANTS.

The following instructions for drying plants are from the pen of Rev. G. Henslow, one of the best practical botanists in England, and their precision and minuteness will make them welcome to such readers of the HORTICULTURIST as desire to try their hands at this interesting and attractive mode of preserving plants:

"The materials required are common cartridge paper, thick white blotting paper, cotton wadding and mill-board, all cut to the same size. The plants should be gathered in dry weather, and soon after the flowers open, when their colors are brightest. Succulent plants (such as Daffodil, Orchis, or Stone-crop) should be put into scalding water, with the exception of the flowers, for a minute or two, then laid on a cloth to dry.

"Arrange the papers and specimens in the following order: Mill-board, cartridge-paper, wadding (split open, and the glazed side placed next to the cartridge paper), blotting paper; the specimens, having small pieces of wadding placed within and around the flowers to draw off all the moisture as quickly as possible, blotting paper, wadding as before, cartridge paper, mill-board. When the specimens, etc., are thus arranged, heavy weights should be put on them; about thirty pounds the first day, sixty pounds afterward. Remove them from under pressure in a day or two; carefully take away all the papers, etc., except the blotting papers between which the specimens are placed; put these in a warm air to dry, while the removed papers, etc., are dried in the sun, or by the fire. When dry (but not warm) place them in the same order as before; put all under the heavier pressure for a few days when (if not succulent) they will be dry.

"Flowers of different colors require different treatment to preserve their colors. Blue flowers must be dried with heat, either under a case of hot sand before a fire, with a hot iron, or in a cool oven. Red flowers are injured by heat; they require to be washed with muriatic acid, diluted in spirits of wine, to fix the color. One part of acid to three parts of spirit is about the proportion. The best brush with which to apply this mixture is the head of a thistle when in seed, as the acid destroys a hair-pencil, and injures whatever it touches (except glass or china); therefore it should be used with great care. Many yellow flowers turn green even after they have remained yellow some weeks; they must therefore be dried repeatedly before the fire, and again after they are mounted on paper, and kept in a dry place. Purple flowers require as much care, or they soon turn a light brown. White flowers turn brown if handled or brushed before they are dried.

"Daisies, Pansies, and some other flowers must not be removed from under pressure for two or three days, or the petals will curl up. As all dried plants (Ferns excepted) are liable to be infested by minute insects, a small quantity of the poison, corrosive sublimate, dissolved in spirits of wine, should be added to the paste, which it will also preserve from mould. The best

cement for fixing the specimens on to the paper or card-board is gum-paste. It is composed of thick gum-water and flour, mixed in warm water, by adding the two together warm, and of a consistency that will run off the hair pencil."

LOS ANGELES ORANGES.

J. W. Webb, in the Lompoc *Herald*, thus describes some of the varieties of Oranges raised in the orchard of Mr. Thos. A. Garey, at Los Angeles. The whole list embraces about fifty kinds:

"The Navel, from Australia, bloomed the first year; some are setting with promise of ripening now. A beautiful ornamental kind of Oranges and Lemons has variegated leaves, resembling in color of leaf the Japanese Honeysuckle, or the variegated Myrtle, a common creeper in our own gardens. The Mediterranean, Garey's favorite, is seedless, without pith in the centre, and has very compact flesh. The Seville Orange does well; it is valued for its bright color and peculiarly bitter rind, which, with the pulp, makes the best of marmalade, or orange preserve. Well do I remember the toothsome article my mother used to make for our family in England, where we could get the Oranges speedily from Seville itself, in Spain. The St. Michael are generally small, but some two-year old trees had a dozen last season, and are now, at three years old, full. This was a great favorite in England. I well remember having heard the street peddlers call out 'Here's your sweet St. Nicholas Oranges,' and they know well what name takes best with their customers. The Duroi, at two years old, bore twenty-two perfect Oranges. The Maltese Blood Orange, only two years old, was as full of fruit as ordinary Plum-trees. Common Orange-trees were pointed out, budded on Lemon stocks, that bore 250 good flavored and sized Oranges last year. Mr. Garey says trees bear soonest when budded, Lemon on Orange, or *vice versa*. Mr. Strong, nurseryman at Westminster, subsequently told me that he has refrained from trying the Orange on Lemon stock, fearing they would be small and short-lived trees, because the Lemon is really but a bush. He is waiting to see the matter well tested. A number of Mexican Lime-trees, said to be the best kind, were very full of green fruit. They bear the year round, and at from five to eight years old bear from 500 to 600 each. The Bouquet Orange is very fragrant and has large blossoms. The finest grows in clusters, only ornamental. There is a white-fleshed Orange, containing no pungent oil in the skin. The Japanese Lemons are good and early. If I remember, Colonel MacLeod has some trees of this kind in his garden. The Pumalo is an ornamental tree, with fine glossy leaves and fruit twenty-one to twenty-seven inches in circumference, pear-shaped, but coarse for eating. The Mandarin is small, thin-skinned, and bears early. As a general rule, it is said where the Pomegranate will do well the Orange will."

THE PANAMA HAT PLANT (*CARLUDOVICA PALMATA*).

The London *Garden* presents its readers with an engraving and an instructive account of this both useful and ornamental plant.

During the last twenty years it has acquired a vast importance as the source of the fibre used in the manufacture of the true Panama hat.

The Carludovica was introduced into

Europe about the year 1808. It is a native of Bolivia, Peru, New Granada, and Ecuador, and prefers damp sheltered positions in the deeply-wooded valleys of that part of South America. It is in general stemless, the leaf-stalks and flowers shooting directly from the roots. The leaves, which are mounted on a solid triangular petiole, are palmate and folded like a fan. As they increase in size, they split into three or four divisions. The leaf-disc varies in diameter from sixteen to thirty inches and even more, the leaf-stalk being often six or seven feet in length. When carefully cultivated, the leaf is of a brilliant green. The flowers, although they do not constitute the chief beauty of the plant, are nevertheless singular in their way. They are monœcious, on the same spadix, the female flower being surrounded by four males. On reaching maturity, it breaks up, exposing the inside of the fruit as well as the axis round which it is placed. These parts are of a brilliant scarlet, which is rendered all the more intense by the strong contrast of the bright green surface of the spadix and of the leaves by which it is surrounded.

In Weddel's "Travels in North Bolivia," we find an account of the manufacture of the Panama hats from the leaves. The Bolivians give the Carludovica the name of Jipagapa, a town in the republic of Ecuador, which is the principal seat of the hat manufacture—"Panama," like "Mocha" in the case of Coffee and "Brussels" in that of carpets, being a misnomer.

Before the leaf has begun to open—when, in fact, it resembles a closed fan—it is cut off close to the petiole, the base of which forms the centre of the crown of the hat. It is then divided longitudinally into strips with the thumb nail, the thick part forming the mid-rib being rejected. The number of shreds into which it is divided of course depends on the fineness of the hat into which they are to be manufactured.

The split leaf is next dipped into boiling water, then into tepid water acidulated with Lemon-juice, and lastly, it is allowed to soak in cold water for some time, and afterward dried in the sun. Each hat is, or ought to be, made of a single leaf. The damping and drying operations cause the shreds to assume a curdled or cylindrical form, which much increases their strength without injuring their pliancy. Before plaiting, the coarser qualities are damped with water, but the finest sorts are left out in the morning dew and worked on before sunrise. A hat of the finest quality, made out of a single leaf, will take several months to make it complete, and the plaiting will be so fine as hardly to be perceptible at a short distance.

The Carludovica Palmata is by no means difficult to cultivate, and it is one of the most hardy species of the genus. It grows well in the damp heat of an Orchid-house where the temperature does not fall below 60°.

Like other Screw Pines—an order to which it belongs—a copious supply of moisture at the root is required all the year around, but more particularly when it is making its growth.

CHERRY OR VERSAILLES CURRANT.

There has been considerable discussion among our pomologists in regard to the identity of the two Currants known by the above names. Our nurserymen with few exceptions have offered both Cherry and Versailles in their catalogues as distinct sorts, charging in some instances fifty per cent.

more for the latter than the former, and while they doubtless believed that there was a difference between the two, we have for the past ten years or more considered them identical. As an evidence of this we quote from the "Small Fruit Culturist," page 205, 1867: "Very large; bunch, long and slightly tapering; dark red, acid; and by many it is considered to be a better flavored variety than the Cherry, but by others very similar, if not identical. The principal points of distinction claimed are that the Versailles is not so acid as the Cherry, and that the bunches are more tapering. But like variations may be observed in other well-known varieties, and upon plants growing in close proximity. At one time I thought that there was a difference in the growth and foliage of the two kinds, but more experience has not confirmed me in this opinion."

The above opinion was not reached through hasty investigations, but after procuring plants from various European nurseries, as well as all the best known and most reliable in this country.

E. P. Roe, in his late work entitled "A Manual on the Culture of Small Fruits," after referring to what we have written, as well as others, on the subject, says, "But those purchasing the Versailles with the expectation of getting something very different and much better than the Cherry, should be undeceived."

We would naturally suppose that the English pomologist and nurseryman would be as likely as ourselves to discover a difference between the two sorts named, if any really existed, but, in an exhaustive article on Currants, by A. F. Barron, in the London *Garden* for April of the present year, we find this head-line to the paragraph describing the Cherry-currant, "Cherry (*Synonym, La Versailles*)."

Now we leave it to our horticulturists in general, if it is not about time to drop the name Versailles from the list of Currants, or merely insert it as a synonym of the Cherry.

HUNGARIAN WINES.

What is Tokay, and how is it made? Is it true that only kings and queens are allowed to drink this wine? Tokay is the most celebrated of all the Hungarian wines, and is made from Grapes which grow on the slopes of the hills near the town of Tokay, in Northern Hungary. The finest of this wine is said to be produced from a small vineyard, not occupying more than two acres; the whole produce of which finds its way to the imperial cellar, and is indeed an imperial manufacture. There are five qualities of this Hungarian wine: Essence, Ausbruch, Máslás, Samovodny, and ordinary. The first of these, the "Essence," is the most costly wine in the world, selling at from one to three pounds sterling per small Tokay bottle, and is very rarely for sale at all, and is considered peculiarly the wine of crowned heads and princes. The others are generally found for sale in small quantities in any market where costly wines are to be had, and command good prices. Hungarian wines are of three kinds: Natural wine, called *Samovodny;* Máslás, of dry and plump berries used in certain proportions; and ordinary wine, made only from plump Grapes.

It is a peculiarity of the Hungarian wines that the Grapes ripening earliest often burst and discharge a portion of their juice, after which they dry up and are converted into lumps of sugar, called *aszu* (German Trockenbeeren), or

dry berries. These very rarely comprise an entire bunch, but are interspersed with fully ripe and plump Grapes. It is customary at the vintage to separate the dry berries from the others; but when the clusters are put into the press without undergoing this process, the product is known as natural wine. The choice varieties are made from the ordinary wine, with the addition of dry berries. This is Máslás. It is of four qualities, according to the quantity of dry berries added to each cask of wine. When re-enforced beyond these proportions it is called *aszubar* or *Ausbruch*, the choicest kind of which is that running spontaneously from the musk-infused dry berries, known as "Essence." These fortified wines are as a rule very alcoholic and sweet, and are the chief wines of commerce.

ORNAMENTAL BASKET.

Procure cigar-lighters, or lamp-lighters some call them, at any of the groceries or drug-stores; one bundle is plenty, and the price is only a nickel. They are white, thin, and smooth, and only the best ones should be selected. After you have them arranged, lay three of the splits across your finger, about equal distances apart; now take another one, and weave it in the opposite way, so that two of the splits will lay under it and one over; another one the same way, only that the two should be over and the one under. Continue in the same way till you have a square, observing that you must have an equal number of splits both ways; I generally have six splits, but there may be more or less, and, in this case, the spaces between the splits will be larger or smaller. Make five of these squares, and when you have them all woven, take some bright-colored zephyr or yarn and work around the last row of the squares the simple cross-stitch, just merely winding it in and out, and poking through. When you have all the five worked, take the scissors and notch the edges of each split, so as to give it a kind of finishing touch. Now you have the basket ready to put together, which is the troublesome job, for me, anyway. Take one of the pieces for the bottom, and fasten another piece to the corner, having the two corners together; now another piece to another corner of the bottom (remember to tie it securely), and then the two corners of the pieces of that are tied on together; put one of the four pieces at each corner of the bottom, and then tie their corners together, and you have the basket ready for balls or tassels. The side pieces will all stand diamond-shaped, with one corner at the top, one at the bottom, and one where they are tied together. Now make either tassels or balls of the zephyr of the same kind of which the pieces are worked, and tie on the corners where they are joined; then knit a string, by which to hang it up, and your basket is completed. I have one worked with scarlet, and tassels of the same, filled with artificial flowers. They are pretty to hang in the window, or any convenient place, and any lady who understands fancy work can easily make one of these little baskets.—*Florence Miller.*

FOSSIL PLANTS IN GREENLAND.

From the fossil remains of numerous land-plants and a few insects found in the Miocene beds of Disco Island, it appears that in comparatively recent times a luxuriant vegetation, somewhat similar in character to that of California or the Southern United States, flourished in these Arctic wastes. Lux-

uriant evergreen Oaks, Magnolias, and Sequoias grew where now is found only the dwarf Willow, creeping along the ground with a stem not over half an inch in diameter. Among the fossil trees of Greenland, Prof. Heer has discovered three distinct species of the Sequoia, nine of Oak, four of which were evergreen, like Italian Oak, two Beeches, a Chestnut, two Planes, and a Walnut. "Besides these," writes Prof. Heer, "American species, such as the Magnolias, Sassafrasses, and Liquid-ambers, were represented there; and the characters of the Ebony-tree are to be distinguished in two of the species. The Hazel, the Sumach, the Buckthorn and the Holly, the Guelder-rose, and the White, probably formed the thickets at the borders of woods; while the vine, the Ivy, and the Sarsaparilla climbed over the trees of the virgin forest, and adorned them with garlands. In the shadow of the wood grew a profusion of Ferns, which covered the soil with their elegant fronds. The insects which gave animation to these solitudes are not all lost. The impressions of these which have reached us show that *Chrysomelos* and *Castilidæ* enjoyed themselves in the sun, and the large *Trogsitæ* pierced the bark of the trees, while the charming *Cicadellæ* leaped about among the herbage." In all, about one hundred and sixty-seven species of Miocene plants have been discovered in Greenland.—*Popular Science Monthly.*

ARUM DRACUNCULUS.

The Arum Dracunculus has never received an extravagant amount of praise, either for its beauty, which is of the monstrous sort, or for the odor which it possesses in an eminent degree, and which it is pleasanter to describe by telling what it is not than by what it is. Many naturalists suppose that it is the fragrance of flowers as well as their bright colors that attracts the insects necessary to their fertilization. In the instance of the Arum, the velvety-purple of its spathe may alone suffice, else it must be supposed that odors that are offensive to the human olfactory are agreeable to that of the insect—a supposition that is not, however, improbable, when we consider how variously the same odor will effect different persons.

We find in the experimental grounds, which are now devoted to the *Rural New Yorker*, where the Arum is now blooming, that the goblet-shaped bottom of the spathe which surrounds the stamens and pistils of the spadix, is partly filled with various insects which feed upon the pollen. The nut-like pistils are crowded upon the base extending an inch or more upward where they meet the stamens. It is very easy for the insects to creep up the rough surface of the pistils and feed upon the pollen; but above the stamens, the spadix is naked and slippery, so that they find it a troublesome if not an impossible matter to escape in this way. Equally difficult is it for them to creep up the inflexed sides of the swollen part of the spathe. After an inch or so of progress, they lose footing and fall to the bottom, where they exist in numbers sufficient to crush or smother one another. As the spathe of this Arum consists of a leaf the edges of which are not joined together, the swollen bottom allows water to escape, otherwise in this plant as in the pitcher and other so-called carnivorous plants, the insects would be drowned and an opportunity afforded to our infinitesimal botanists to investigate whether in this, as in those, the putrid animal bodies were

not "dissolved by this subtle fluid and converted into plant-food."

Arum Dracunculus averages two feet in height, and consists of six or eight curly leaves pedately or hastately parted on long petioles, which are spotted like a leopard-skin with dull brown. The spathe is one foot or more in length, of a vivid, glossy, reddish purple inside, deeply veined and green outside, except the edges, which are also purple.

The Caladium, Calla Lily, and many of our finest hot house-plants, are sisters of the Arum. One of the showiest is the brilliant Anthurium, elegant specimens of which may now be seen in Horticultural Hall of the Centennial Exhibition.

COMPOSTING MANURES.

This work is always in order, and its importance can not be too often dwelt upon. We have frequently given advice upon the subject, but will now add the following suggestions found in the transactions of the Essex Co. (Mass) Society, from the pen of J. J. H. Gregory, the well known seedsman of Marblehead. He says:

"For more than twenty years the farmers of this town have been market-gardeners, and while the average quantity of manure used by them in their gardening operations is from eight to ten cords per acre, the average quantity of barn-yard manure is not above two cords per acre; the great dependence is upon composts, on which they have kept up the fertility of their land, and in fact increased their crops. In the course of his report Mr. Gregory tells how he made a compost for a three-acre field, consisting of twenty-five barrels of hen manure, twelve barrels of crushed bone, and three barrels of Kayni (potash salts). These three articles make up about all that vegetation needs, viz: nitrogen, phosphate of lime, and potash—and the cost was $71 30, including $5 for expense of composting, and $5 for carting the materials. Manured with stable manure in sufficient quantity, the cost of manuring the three acres would have been $180. In making the compost, the materials were laid up in a square heap, in alternate layers, to the height of three feet. It remained three days until well heated by fermentation, when it was forked over, again left for one day, and then forked over, when it was very thoroughly mixed and ready for use. A similar compost may be made by any of our horticulturists, and if the chemical formulas aid them in making such composts, or by being used give greater value to the same, their promulgation will be a matter of public good."

SHADE TREES IN PASTURES.

If any man can adduce a good reason why there should be no shade-trees in pastures, I wish to hear from him at once, as we have read the agricultural papers for years, and have not seen a single argument worth noticing against shade-trees in pastures. What a brute a farmer must be who would be willing to see his cows, horses, and sheep sweating under a summer sun, with the thermometer in the shade up to 90 or 100 degrees; he should be stripped of his clothes and exposed to the same heat till he had learned to appreciate the value of shade to animals in summer. The only reason advanced against shade-trees in pastures is, that cows are inclined to spend too much of their time under them, and consequently give less milk than they would if no shade existed. This is all talk. Cows that rest a portion of the time under

trees feed more nights than those do that have no shade in their pastures. The farmer who advocates cutting the shade-trees of pastures is a heathen in his feelings, and not worthy of owning live stock, because to furnish such stock with no shade is downright cruelty to animals, and ought to be an indictable offense. The more comfortable and quiet we keep our cows, the more milk they will produce, and we contend that cows that have a shady grove to lie in, or large shade-trees in different parts of the pastures to stand or lie under, will produce as much milk as cows do without shade, and the animals are far more comfortable, and their owners feel a pleasure in seeing them enjoy themselves in a cool shade during the heat of the summer days.—*Cor. New England Farmer.*

Editorial Portfolio.

OUR FRONTISPIECE.

In the place of a colored flower representation, which we expected to receive in time for this issue, we present a true picture of one of the centennial Catholic missions of this State, now in an unprosperous and decaying condition. It is pleasant to reproduce these missionary landmarks. A lady correspondent writes as follows:

"In the town of San Luis Obispo, built in the midst of what was once the Mission garden, the houses have crowded close up to the Mission church, thus improving the looks neither of the one nor the other. The old church has always reminded me of some of those decayed gentle-folks whom we see sometimes snubbed and crowded into the corner by a set of shabby-genteel, upstart relations. The town itself is a stirring, bustling place, full of life, and a great deal too small for the amount of business transacted in it. Any one coming from San Francisco would hardly believe, at first sight, how well the merchants have succeeded in carrying a part of the metropolis down into their establishments here. Even Father Zastrow, the Spanish priest in charge of the old Mission, seems to have taken the contagion from these restless Americans, and displays an amount of energy seldom met with in one of his calling and country. Showing us through the Mission church and the grounds attached, we saw everywhere the fruits and effects of the good Father's industry. The Mission, which had lain idle and neglected for forty years when the *Padre* was sent to take charge of it, is looking fresh and cheerful, as far as the *Padre's* hand can reach. The walls of the church are all the way from three to nine feet in thickness, and constructed of *adobe* and rock, mixed. Though unused and exposed for such a length of time, nothing was ever taken from the church; every thing, down to the little old-fashioned silver censer and incense-jar, is still there, just as it was nearly a hundred years ago. The ceiling and walls of the church have been newly painted—sky-blue and pink—at good Father Zastrow's suggestion. In the vestry-room were the very basin and urn in which the *padres*, so many years before, washed the sacred cloths pertaining to the communion service; and richer and gaudier than anything I had ever seen, were the vestments and robes which had lain in this same old chest of drawers for over seventy-five years. How fresh the scarlet of this velvet, and how bright the gold fringe and border on that black satin! Silk, brocaded with gold and silver flowers, and satin with raised arabesques running through it; surely, there is nothing manufactured in our day like these

vestments sent from wealthy, wicked old Spain, to flaunt in the faces of the gaping, worshiping Indians.

"To the remark of friend Murray: That many a ship-load of grain and beef-hides must have gone back to Spain for these robes, Father Zastrow replied, in his native tongue, 'When you want fine bread, you must send the best of flour.' And they could afford to 'send the best of flour,' these old *padres*, when the Mission was in its prime. Are we not told of one Father who returned to his native land with $100,000 in gold, from this very church? The Mission owned some eighty thousand head of cattle then, and over seventy thousand sheep; not to mention a small matter of five or six thousand horses, and about an equal number of mules.

"When we bade the *Padre* adieu, he advised us to visit the part of the Mission garden that lies a little below the main street of the town. It is leased to some Italians now, but was at one time in charge of Americans, who, by the way, realized the handsome sum of $120 out of each Olive-tree."

CALIFORNIA WILD FLOWERS.

In conversation with a warm friend, an old Californian, who has enjoyed many summer vacations in the Sierra lake and mountain region of California, he, in his enthusiastic reference to the delightfully invigorating atmosphere of that part of our State—"the finest climate in the world," a phrase to which our own California-made Bret Harte so ironically alludes in his prose writings, notably in his recent and only novel entitled "Gabriel Conroy," just somewhat abruptly closed in *Scribner's Monthly*, but which is so truly applicable to the entire State—remarked that he never saw such a spontaneous growth of wild flowers anywhere. The sides of the snow-covered mountains presented a vast variegated carpet of rich and dazzling colors, the blending of which produced a most harmonious effect. He said that within his arm's reach, while basking in the sunshine and enjoying the feast of colors, he gathered twenty-six different varieties of flowers in a brief space of time. Another pleasing sight was the innumerable butterflies that hovered over this flower-panorama, all their colors harmoniously blending with the gaily arrayed mountain side—having every appearance as if the many-colored petals were detaching themselves in myriad numbers and assuming the brief life of the chrysalis-born insect.

FLORAL DECORATIONS.

A few days since we had the pleasure of seeing several splendid and lovely floral testimonials formed by the skillful and tasty hands of August Duhem, H. C. Leopold, and Chas. Leopold, of Miller & Siever's Floral Depot, on Post Street. They were testimonials to M'lle Anna de Belocca, as a worthy compliment to her popularity, socially, among the friends she had made in this city, and as a recognition of her distinguished merit as an artist. It was the most beautiful floral offering we have ever seen here, and probably the finest one that has ever graced the stage of San Francisco. One of them, a large Jardiniere, was about five feet high and nearly four feet in breadth, and was embellished from top to bottom with wreaths, stars, a harp, and other designs of flowers wrought in the choicest and richest kinds which the season could afford, while the main portion consisted of a bed of deliciously scent-

ed fresh white flowers, such as Tuberoses, Lilies, etc., with the name "Belocca" in Rose Carnation Pinks; separate specimens of a harp, a centennial bell, a cottage, and several brilliant bouquets, etc., completed this choice and most elaborately and artistically worked collection, showing, if such a proof were necessary, that August Duhem, and H. C. and Charles Leopold are among the finest floral workers and decorators in this city. A good photograph of these choice presents has been taken by those distinguished photographers, Messrs. Houseworth & Co., and may be seen in the window of Messrs. Miller & Siever's store.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

Those who are most experienced in the cultivation of fruit, and who are first-rate orchardists, are in the excellent habit of thinning out where the trees overbear, which is very apt to be the case on this coast. It is a judicious system, on an average, to take off one-half of the fruit from the trees when about the size of Hickory nuts, and sometimes even two-thirds to three-fourths is picked off, when the tree is very full or liable to bend down with the load of fruit at maturity. There are two good reasons for this: one, to prevent the limbs from breaking under the load of ripening fruit; and another, to insure the large size of the fruit that is left upon the tree, together with superior eating qualities. When fruit is large and handsome its value for market is much enhanced. Pruning trees heavily, and removing the fruit-bearing twigs will prevent over-bearing, but then the tree is injured by it. It is best to encourage as many fruit spurs to grow as possible, and make up the mind without flinching to thin out the fruit. It will always pay well to do so when the trees are too crowded with their produce. It no doubt with many has the appearance of wasting the fruit too much, but it is often expedient, and the superior weight and excellence, when grown, of what is left, will surely satisfy any reasonable person that it is the best of policy, and will pay well for the trouble, although it is unfortunately so seldom practiced by the general cultivator.

Now that the Grape season is approaching, we will speak of their healthy qualities in the natural state. There is no doubt of their wholesome character in some ailments, especially in dyspepsia, when eaten by persons who are thirsty through proper and active exercise. There is a great deal of nutriment in them, and they are an excellent diuretic. Dr. Hartsen, in *Centralblatt fur die Med. Wissenschaften*, recommends Grapes as a valuable diet in fever. The Grape contains a considerable amount of hydro-carbonaceous matter, together with a certain quantity of potassium salts, a combination which does not irritate, but on the contrary soothes the stomach, and consequently is used with advantage, even in dyspepsia. While considering the carbo-hydrates contained in the Grape, we must not neglect the organic acids, particularly tartaric acid. Dr. Hartsen thinks the nourishing influence of these acids too much neglected. It is indeed known that they are changed to carbonic acid in the blood, and are excreted as carbonates in the urine. Possibly careful research might show that, under some circumstances, the organic acids are changed to fats. Dr. Hartsen believes that the organic acids should be ranked with the carbo-hydrates as

food. When fresh Grapes are not to be had, raisins or diluted wine might be used.

With regard to the "Apple Cure:" A correspondent of "Laws of Life" speaks highly of the use of Apples as a cure for dyspepsia, and while we in part agree with him that fruit is healthy and for some kinds of dyspepsia may be beneficial, in others it is about the worst food a person can take. Each and every individual must decide for himself in such cases, but we give the opinion of the correspondent for what it is worth:

"Persons suffering from dyspepsia, constipation, congestion of brain, and other ills which attend on general debility, are accustomed to apply to the doctors for bitters for the stomach, cathartics for the bowels, and iron for the blood. But it is generally found that the relief to the stomach and bowels induced by medicine is temporary, and when reaction takes place after stimulation, the vital organs are weaker, and the patient is worse off in every respect than when he commenced the use of medicine.

"We have a remedy to suggest, which, although it may not be of universal application, has, in my own case and that of many others who at my suggestion have tried it, brought relief after all drug remedies had failed. Apples are a natural stimulant to the stomach, bowels, and kidneys, and, unlike medicine, keep up, when habitually eaten, a continued healthy action of these organs. Apples are not only stimulative, they are also nutritive."

So much for Apples, now for the smaller fruits, such as the Raspberry, for instance. And here is the effect of that fruit as a medicine, in an extract from an exchange:

"Many years ago a chronic cough induced us to look into medical books for the best expectorants. Dr. Good stated that ripe Raspberries were one of the best remedies of the kind. As it was then approaching mid-summer, we obtained a daily supply for some weeks. We found them quite an agreeable medicine to take. They cured the cough. Again, at a late meeting of the Western New York Farmers' Club, Wm. H. Pillow, of Rochester, said he had been in the small fruit business for several years, and he believed that Strawberries had saved his life. One spring, after a severe sickness, he had no appetite till Strawberries came, when he almost lived on them, and improved rapidly. Land-owners, plant Strawberries and Raspberries!"

The case of an invalid was cited some years ago in the New York *Tribune*, who lived a year on no other food than Apples, and during the time gained in flesh and strength. This person stated: "In my own case I had been very much troubled with the 'heart-burn.' I tried two meals a day, to which I still adhere, Graham bread and water treatment, but with only partial success. Thanks to raw Apples I have no more heart-burn. I finish each meal with two or three, and the cooling effect on my stomach, and indirectly on my brain, is most grateful. Formerly I was troubled with wakefulness, would lie awake thinking, unable to sleep, until late in the night. I am wakeful no more. When I commenced to eat Apples as a remedy I weighed 130 pounds; in less than two months my weight was over 160 pounds, my strength increasing as my weight. My food is now well digested and assimilated, the hue of health is restored to my cheek; in other words, I am cured."

We think if people would eat more fruit, using it wisely, and throw medi-

cine to the dogs, it would be a great benefit to them, though it would not benefit the quacks correspondingly.

With regard to the fruit market: The flowing into the market of large quantities of Early Crawford and Tillotson Peaches from about the 20th to the end of last month (July), was still increasing, and the prices, of course, were reduced in consequence. By the single basket the Early Crawford sold at $1.50 to $2, the Tillotson at 75 cents to $1.50. These Peaches are large, juicy, and well flavored, with a handsome red blush. California Cherries were nearly out of market, but there was a pretty good sprinkling that came from Oregon, the season of course being later there. The supply of Apricots was diminishing, and therefore the prices were higher. Strawberries and Plums, being on the increase, particularly the latter, were cheaper. German Prunes retailed at 15 cents. A few green Bartlett Pears made their appearance, which were only fit for cooking. Apples were plentiful at 75 cents to $1.50 per box, delivered. A further decline took place in Potatoes. The best Early Rose and Halfmoon Bay Reds were obtainable by the single sack, delivered, at $1.50 to $1.75 per 100 lbs. String Beans, Tomatoes, and Egg Plant were cheaper.

About the last of July the large quantity of Peaches in the market had nearly reached its height. The supply was never so heavy, not only from the great crop this year, but from a largely increased planting of the trees. The supply was very heavy this last week of July, and continued much larger into the first two weeks of this month (August), when it began to fall off considerably. Choice Early Crawfords were purchased by the single basket at $1 and $1.25, delivered. Other varieties were even a little cheaper. Plums were very plentiful, and were probably as cheap as they will be this season. Cherries and Currants were about out of market. Apples by the single box were selling at 75c. to $1.50, and Pears at $1 to $1.50 for common, and $2.50 for Bartlett.

In the vegetable market very little change took place in prices. Sweet Potatoes were more abundant and cheaper. By the sack, the best sold at $2.25 to $2.50 per 100 lbs. Halfmoon Bay Red and Early Rose were steady at $1.50 per 100 lbs., delivered.

The great event in the fruit market about the beginning of this month (August), has been the immense and unprecedented numbers of boxes of Peaches, chiefly Crawfords, which have made their splendid appearance. All fruits this year are of the finest quality and size, owing chiefly, no doubt, to the plentiful rains during the winter, up to a late period in spring. These rains have given the trees a vigorous and healthy growth, and rendered the Peaches and other fruits quite juicy and good flavored. The daily arrivals of Peaches have varied lately from 5,000 to 8,000 packages, and exceeding the receipts of any former period. The supply was so great that commission merchants found it impossible to work it off, except at rates that the producers thought were ruinous. The new fruit-growers have suffered greatly, the old ones can better stand it, as they have heretofore done well, the prices having been in previous years much better than now. Single baskets of the best Peaches could be purchased from the jobbers and peddlers at 60 to 75 cents, and a fair article for 25 to 40 cents, with 25 cents added for delivery. This glut in Peaches had a depressing and demoralizing effect upon the fruit market generally, Plums and Apples in partic-

ular suffering a heavy decline. Good Apples and Bartlett Pears were not very abundant, and prices were maintained. The former sold by the box at $1 to $2, delivered. Grapes were plentiful at the following rates: Sweetwater and Chasselas, 5 to 8c.; Rose of Peru and Black Hamburg, 10 to 12½c.; Muscat, 15 to 20c. per lb. Red Cling Nectarines were on the stands in small quantities, and when ripe, very delicious. Vegetables were generally unchanged, though Potatoes were cheaper. Good to choice by the single sack sold at $1 to $1.25 per 100 lbs., delivered.

NEW PLANTS.

New Double White Clematis. — In Lucie Lemoine we have a new double-flowering white Clematis which is destined to take high rank among these beautiful garden flowers. It is a Continental variety, as yet but little known, for, as we have had so many introduced of late by the English raisers, it has been well nigh overlooked. Hence the necessity of directing prominent attention to it. It is an early-flowering variety, and the flowers, which are of the purest white, are produced very freely; they are rather larger than those of John Gould Veitch, and more double. It can be strongly recommended for pot-culture, as a conservatory climber, and for out-door decoration generally. It now appears to be in the hands of all the principal nurserymen.

Fritillaria pudica.—A beautiful yellow-flowering bulb of Utah and California; is finding its way into general culture. Unlike so many of these far Western things it seems to be adapted to Eastern culture. The flower much resembles the Snowdrop in form, and flowers a little earlier than that well-known favorite. It might be called yellow Snowdrop.

Fritillaria recurva (Benth.), with flowers worthy of being described as scarlet, is in flower at Kew, and, it is needless to say, is a striking object. It grows to a height of from one to two feet, though the present example is less than six inches, from the fact of the bulbs having been somewhat weak, and without sufficient time to get established. The leaves are very narrow, and of a grayish green tint. The flowers number from three to eight, are narrowly campanulate, and from an inch to an inch and a half long, but in this case they are smaller. No other known species can approach this in color. On first expansion it appears most brilliant, being afterward apparently toned down with an increase of yellow, which would seem the ground color. The tessellation is somewhat obscure, though evident on close examination. On the inside the perianth is distinctly yellow, and is covered with numerous usually linear scarlet spots. It is a native of California, and will doubtless prove one of the most interesting bulbs introduced.

Cheilanthes fragrans.—A very pretty dwarf Cystopteris-like Fern, forming dense tufts in vertical fissures of rocks fully exposed to the sun. Fronds bright green, two or three times divided, with deep brown bristly-scaled stalks; highly fragrant with the scent of new-mown hay. A native of the mountains of Corsica and Switzerland. Probably hardy in favorable situations.

Phormium Colensoi variegatum.—This beautiful plant has narrowish, erect, pointed, dark-green leaves, scarcely an inch in width, elegantly banded at the margin with one or sometimes two narrow stripes of creamy white. It has the same distichous mode

of growth of *P. tenax*, but is altogether a smaller and more elegant plant, while its more erect habit and narrower leaves give it quite a distinct appearance from that of the variegated *Phormium tenax*. It is a native of New Zealand.

CORYNOSTYLIS HYBANTHUS ALBIFLORA.—The genus Corynostylis belongs to the family of the Violets, and consists of semi-scandent shrubs.

Editorial Gleanings.

FLOWERS.

There is no season in the year
That lifts man's heart to heaven so near
As summer;
When flowers about our pathway grow,
And Roses on the hedgerows blow;
Sweet summer!

And as its perfumed breath doth rise,
In silent homage to the skies
Up-stealing,
A thousand memories forth start,
Long-hidden pictures in the heart
Revealing;

Where Lilac-chains with scented links,
Or treasured tuft of red Clove Pinks,
Or Heather
'Mongst which we played, fond stories tell
Of parted ones, who once did dwell
Together.

Again, the feathery seeds away
Are puffed to tell the time of day;
Whilst golden-
Hued Cowslips into balls we twine,
Or part the horns in Columbine
Enfolden.

Whilst through the woods the whole day long
The cuckoo sings an idle song,
Awaking
The echo of a dulcet peal,
That rang ere hearts began to feel
Heart-breaking;

And so it comes to pass that we
With half a sigh the flowers see,
Half gladness;
And round our hearts they twine and twine,
Until their beauty makes divine
Our sadness.

—*Julia Goddard.*

ECONOMY IN HEAT.—"T." writes as follows in the *Western Farm Journal* on a subject which is of interest to all housekeepers:

"For a number of years the writer has used, for warming three rooms, a single heating stove, the heat from which passes through two drums. One of these drums is placed in a room adjoining that containing the stove, and the other is up stairs in a room above the second one. For several weeks experiments have been made, by observations with thermometers, which prove that the intermediate drum, or that between the stove and the last one, heats the room from six to twelve degrees hotter (according to the wind) than the stove can heat, although both rooms are of the same size, and the drum is somewhat smaller than the stove. The room up stairs, fully thirty-five feet distant from the fire, is made quite comfortable for a sleeping room throughout the entire winter. These facts are only stated to show what an immense amount of caloric is wasted by our system of heating with stoves, the pipe from which passes directly into the open air. Fuel, and consequently expense, is not only saved by the use of sheet iron drums, but the house is more comfortably and completely warmed, not only with less fuel, but with no trouble of keeping and making up fires, carrying in wood or coal and carrying out ashes, and cleaning up the dirt caused by doing so."

TREES AND RAIN.—The bulletin of the Torrey Botanical Club contains a suggestive paragraph in reference to the influence of trees upon rain and atmospheric moisture, as shown by the experience of the Island of Santa Cruz, in the West Indies. This island is said to have been a garden of freshness, beau-

ty, and fertility twenty years ago; it was covered with woods, trees were everywhere abundant, and rains were profuse and frequent. The recent visit of a gentleman who had known the island in its palmier days revealed a lamentable change, one-fourth of the island having become an utter desert. The forests and trees had been cut away, rainfalls had ceased, and the process of desiccation, beginning at one end of the island, had advanced gradually and irresistibly upon the land, until for seven miles it had become as dry and barren as the seashore. Houses and plantations had been abandoned, and the advance of desolation was watched by the people, wholly unable to prevent it, but knowing almost to a certainty the time when their own habitations, their gardens, and fresh fields would be a part of the waste. Indeed, the whole island seemed doomed to become a desert. This sad result is owing entirely, according to the belief of the inhabitants, to the destruction of the trees upon the island some years ago.

Almond Culture. — The San Luis Obispo *Tribune* says: "The Almond is the fruit for general culture for profit. It has been demonstrated by the trees growing upon Mr. Andrews' place, that for our country Almonds are a veritable bonanza. Just think of the possibility of a return of $1,500 from one acre of land. This is not a waiting of twelve or fifteen years, as in Orange culture. The fourth year Almonds will repay all outlay up to that date; the fifth year, as in the case of Mr. Andrews, 100 pounds of fruit to the tree is possible and probable. One hundred trees to the acre gives 10,000 pounds, or five tons, to the acre. The wholesale market price is from eighteen to twenty-five cents per pound. Take twenty cents as the average, and we get a return of $2,000. This is too much, so we will reduce it one-half, and then make as much as the best Orange orchard in the State. The living evidence of these figures may be seen within half a mile of the court-house. Colonel Hollister has planted 25,000 Almonds, and within a year or two his income from this source will be the talk of the world. Let our people profit by this example, and plant liberally during the coming season."

Andromeda arborea.—We seldom see in pleasure grounds the *Andromeda arborea* (sometimes called *Lyonia arborea*), and yet it is one of the prettiest of deciduous trees of moderate growth, and when in blossom it forms an object of singular elegance. The tree is somewhat erect in its habit of growth, and is clothed with largish oblong serrated leaves, which have an acid taste, whence it has been called the Sorrel-tree. But its chief interest is to be found in its flowers, which are so much like the bells of the Lily of Valley in outward aspect, that the branched panicles might almost be imagined to be made up of a loose cluster of Lily spikes. The resemblance of the horizontal one-sided racemes is, indeed, so striking, that the name of Lily-of-the-Valley Tree might not inappropriately be applied to the species, the more so as it inhabits the valleys of the Alleghanies. This is one of the choice, old-fashioned, neglected plants one meets with in such collections as that at the Knap Hill Nursery.—*Gardeners' Chronicle.*

Vermont Beauty Potato in England. —A correspondent of the London *Garden* speaks enthusiastically of the Vermont Beauty Potato, which is worthy of note inasmuch as American sorts do

not, as a rule, succeed any better in England than the English sorts do here. In speaking of the above named variety he says: "This has proved here to be a most excellent late-keeping variety; to-day I have had a dish of it cooked, and I have never eaten a better Potato. I mentioned some time ago that this is one of the best of the American kinds, aye, and of English sorts, too. It is also a handsome Potato; that coarseness both in haulm and root, so general in the American Potatoes, is quite wanting in the Vermont Beauty. Its comparative freedom from disease, its short haulm, heavy crop, and early-ripening and late-keeping properties all contribute to make it one of our best garden Potatoes. It has the smooth, clean surface of the best of English-raised Potatoes, and in many other respects leaves them a long way behind. Snowflake kept along with Vermont Beauty is not nearly so good."

Shiragi Mushi.—This is a kind of silk-worm that feeds on the leaves of the Chestnut tree, but if reared artificially it becomes lean and the thread is thin. In the common way of reeling only a very inferior thread is obtained; therefore the following method has been adopted: After the worm has reached its full size, it is laid in vinegar that has been boiled once. Then a slight cut is made just behind the scales of the head, but without injuring the gut; then, taking the latter with the fingers of one hand and the body of the worm with the fingers of the other hand, it is drawn a little out of the body. Then the worm is laid in vinegar again, and after a while the gut is pulled out a little further, and so on. Through the influence of the vinegar the gut changes its color into white, and can gradually be pulled out to a length of five or six feet without breaking. This thread is very strong, and also transparent, and chiefly used for fishing purposes.

Importance of Forests.—At the nineteenth annual meeting of the Scottish Arboricultural Society, held recently, the president, in his inaugural address, alluded to the beneficial effects of the maintenance of a due proportion of forest land in every country, from the shelter it gives in spring and protection from high winds, as well as to the common belief that malaria and flights of locusts and noxious insects, etc., are often arrested by belts of forest. He then proceeded to sketch the evils that have followed the reckless cutting down of indigenous wood in many countries, where, only when it was too late, have measures been adopted for preserving the forests. He urged the necessity of prudence and caution in all operations which, on a large scale, interfere with the primeval arrangements of the organic and inorganic world.

Greenhouse Plants in Rooms.—The various greenhouse plants which are kept in rooms require a constant supply of water, which should always be applied on the tops of the pots, and from no consideration whatever should any be suffered to remain in the water pans or saucers under the pots, and they must also be kept clean from dead leaves, etc. They must be fumigated when there is any appearance of insects. With respect to air, the plants should have a good share in fine, warm weather. It is a very common practice to open the under sash window where the plants stand; when thus exposed to the draft it injures them more than if they were actually exposed to the open air. When they begin to grow long and spindling, the tops of the shoots

should be nipped off with a pair of scissors, which will cause them to become thick and bushy.

Growing Tuberoses.—To cultivate the Tuberose, one of the most beautiful of all plants, put the bulbs in six-inch pots, three in each, and use a mixture of equal parts of turfy loam, peat, and leaf-mould, and place them in a pit. Give very little water at first, and as they commence to grow freely increase it, and keep near the glass. When they begin to push up their flower spikes they will of necessity require to be put where they will have sufficient space for the proper development of these tall spikes. These will come into bloom from August to October, when they will require a temperature ranging from sixty to seventy degrees, the latter being preferable.

"The Catalpa tree," says Landreth's *Rural Register*, "indigenous to the greater portion of the Union, has been long known to a limited number to possess wood of an enduring quality for posts; as lasting, it is claimed, as the Black or Yellow Locust—*Robinia pseudo acacia*—but, fortunately unlike it, exempt from insect attack; indeed, so far as our observation has been extended, it is not liable to disease direct or consequential; and as the tree grows readily from seed, there need be no impediment in propagating it to any extent desired. Fence-rows, boundaries, lanes, the roadside, impracticable plats of ground, inaccessible knolls, might each be seized upon for planting this useful and ornamental tree."

A Paradise of Fruit—Mr. Hewitt's premises at Santa Rosa contain about thirteen acres, running from Fourth Street back to Santa Rosa Creek. His residence is a large and handsome two-story brick, completely surrounded by an orchard containing very nearly all sorts of fruit-trees. Those immediately in front and about the dwelling are handsome Almond and Walnut-trees, while his large orchard in the rear contains Almonds, Blackberries, Raspberries, Grapes, Apricots, Prunes, Cherries, Chestnuts, Plums, and all kinds of Apples, Peaches, and Pears. And all are full of fruit—some breaking down with it.—*Democrat.*

Largest American Nursery. — The nursery of Ellwanger & Barry, at Rochester, is the largest establishment of the kind in America, occupying 650 acres, containing 16 plant houses which cover 30,000 square feet of ground, employing 250 men for the eight months, more in the packing season, and 50 in winter, besides a large number of traveling agents. They keep 30 horses.

METEOROLOGICAL RECORD,

For the Month ending July 31, 1876.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 18 Market Street.)

BAROMETER.

Mean height at 9 A. M.	30.04 in.
do 12 M.	30.04
do 3 P. M.	30.04
do 6 P. M.	30.03
Highest point on the 10th at 12 M.	30.16
Lowest point on the 6th at 6 P. M.	29.88

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	64°
do 12 M.	68°
do 3 P. M.	67°
do 6 P. M.	63°
Highest point on the 11th at 12 M.	80°
Lowest point on the 6th at 6 P. M.	58°

SELF-REGISTERING THERMOMETER.

Mean height during the night	45°
Highest point at sunrise on the 2d	51°
Lowest point at sunrise on the 15th and 27th	42°

WINDS.

South-west on 3 days; west on 28 days.

WEATHER.

Clear all day 11 days; cloudy all day 3 days; variable on 17 days; misting rain on 1 day.

RAIN GAUGE.	Inch.
6th	0.01

Chinese Primrose (Primula sinensis.)

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. VI. SAN FRANCISCO, SEPTEMBER, 1876. No. 9.

WINTER FLOWERING PLANTS.

BY F. A. MILLER.

The winter season will soon approach again, and flowers will become scarce as usual, and on account of their scarcity they will be much more appreciated than during spring and summer, when they are plentiful everywhere.. It is time now to provide for the winter, in order to establish plants sufficiently to produce flowers when they are wanted. We certainly can not rely upon the open ground for flowers during winter, as all depends on the weather, which, even in the mild climate of California, is severe on flowering plants; if there will be flowers in the garden it will be really accidental. Such shrubs as Diosma, Laurustinus, Habrothamnus, Ericas, a few varieties of Fuchsias and Zonale Geraniums will give some flowers, and are very acceptable, but these are considered common here, and others are wanted to make up a variety. In a few sheltered places we may see a some Roses, Cestrums, Abutilons, Plumbago, a few Pinks, Veronica, Sweet Alyssum, and perhaps in a very well protected place some Heliotrope, but they can not be relied upon. Toward Christmas Violets will be coming in, and help out very much, but more is wanted. The outdoor flowers are weather-beaten, rusty looking, and without much scent, except the Violets and Diosma. Flowers raised under glass are brighter, more perfect, cleaner, and better in every respect.

The question is, What plants are most desirable for winter flowering?

The Camellia certainly stands foremost. The beauty of the flower is unequaled, and the plant itself is a pleasing object. Some say the Camellia is hard to cultivate. This is certainly a mistake; no plant requires less attention than the Camellia. A few hints may be acceptable: The Camellia requires a shady place; gas is injurious; over-potting is detrimental, and too much water will cause the buds to drop, while it is equally as bad to let the soil get dry; give plenty of air; syringe frequently, and keep the foliage clean; provide good drainage in the bottom of the pot, and keep the soil moderately damp, neither too wet nor too dry. With these suggestions any one can cultivate the Camellia without risk of loss, and every bud will expand.

The Azalea indica ranks next to the Camellia as a winter flowering plant, although its flowering season commences really in January here. Amateurs tell me that Azaleas are also hard to cultivate. This is another mistake. Treat the Azalea in the very same way as prescribed for the Camellia, and success is certain, with one exception, and that is more light. During our cloudy winter months the Azalea ought to have all the light we can provide for it, excepting a burning sun, which is injurious to them. During summer, however, and during their season of rest, a shaded and protected place in the open air is most desirable. Keep them in small pots, well drained, and never allow the soil to get dry.

The Chinese Primrose is most desirable for winter flowers, particularly the double varieties, which are rather scarce as yet in this market. In the absence of the double varieties, the single ones will do very well, and are indispensable. If provided with light and rich soil, they will furnish a profusion of flowers all winter through.

Bouvardias are most desirable for winter use, but they require a rather warm temperature in order to have them flower continuously; plenty of sun and light and air, whenever the weather permits, are very essential for their success.

Begonias are indispensable, and give general satisfaction; they are also easily cultivated. The following varieties are the best for winter flowering: *B. nitida*, *B. parvifolia*, *B. Weltoniensis*, *B. odorata*, *B. Verschaffelti*, and *B. semperflorens*. Strong healthy plants potted in six-inch pots now, will produce an abundance of flowers during the entire winter season. If a little artificial heat can be given, so much the better for them.

Heliotrope is most valuable at any time. Such as have been planted out in the border of the greenhouse should now be cut back so as to obtain plenty of young wood, which will develop the flowers; a good top-dressing of old manure or some manure water will help them very much. Young vigorous plants shifted now in six-inch pots, will make fine flowering plants for the coming winter.

Hyacinths are very desirable for winter. The new imported bulbs will come in now, and a good supply should be laid in at once, and planted at different times, in order to have them in bloom successively. Their cultivation is simple, and I have given some suggestions about their treatment at various times.

Eupatoriums are now extensively cultivated for winter cut flowers, and certainly they are a most productive class of plants. A few strong plants in six or eight-inch pots will give a profusion of white flowers. *Eupatorium aramaticum* flowers during the early part of winter, while *Eupatorium riparium*, the best of the two, comes into bloom in January and February. Both are indispensable for cut flowers.

In the next number of the HORTICULTURIST I will add a number of others which may be relied upon for winter use.

THE DOUBLE FLOWERING PEACH AND ITS TREATMENT.

BY E. J. HOOPER.

We hardly know of any flowering tree that exhibits such a lovely display of rich and gaily-colored blossoms at a very early period of the year, as the above Peach. The common and double flowered Almond, this double-blossomed Peach, and the dwarf and double dwarf Almond, in the East and in Europe,

where they are most seen and cultivated, are all favorites in the flower garden and shrubbery, but in California they have been but seldom introduced for such ornamental purposes, and not near so much as their beauty entitles them to. But the double-flowering Peach, to perpetuate its great attractive features from year to year, requires a somewhat peculiar treatment in the mode of pruning it, as, under ordinary treatment in that respect, it will become really unsightly; the limbs forming their heads increase in thickness, and make young wood only at the ends, so that in the course of a year or two the trees look like other Peach trees not regularly pruned and pinched. To give a good shape to these trees, the principle to be adhered to should be, not to suffer the formation and increase of old wood after the frame-work of the tree has been established. They should be headed very severely back after they have ceased to blossom in the Spring. This operation would also do very well in winter, and would in that case run less risk of losing the blossoms for a year. By this means the stumps of the limbs so cut off will produce a large number of vigorous shoots, which should not be pinched during the summer, and which will give in the spring following a profusion of beautiful blossoms. In this way the trees will retain their shape, and the number of young shoots will be doubled every year. Should the heads of the trees grow too dense, they must be thinned out. When they are in bloom, as we have observed, they are exceedingly beautiful and showy.

The varieties are the following: *Amygdalus versica fl. pl.*, *A. versicolor fl. pl.*, *A. alba fl. pl.*, *A. communis fl. pl.*, *A. dianthiflora fl. pl.*, *A. camelliæflora fl. pl.* The *versicolor* is especially remarkable: it bears snowy white and dark red flowers, of all shades of color, between dark-red and white, on the same branches. It was introduced by Von Siebold, from Japan, not many years ago. It would be gratifying to us, should we, by this article, induce some zealous amateurs, like Mr. Harmon, of Oakland, for example, to plant the double flowering heads, and to treat them as described in the above. They delight in friable loamy soil, and should have an airy position, open to the course of the sun, but sheltered on the western side. Propagation is usually effected by budding on the common Plum stock, the stronger growing kinds at the height of standards and the dwarfs considerably lower; their relative strength suiting the former for the interior of small groups of trees, and the lower growing kinds finding a fit position near the front of such masses, or the centre of flower beds. The common Almond produces seed abundantly when at maturity, and may be increased by its means; the product forming excellent stocks on which to work the other varieties.

BIRDS OF NEW SOUTH WALES.

BY AN ORNITHOLOGIST.

Australia, and especially New South Wales, is as rich in birds as she is poor in quadrupeds. But a few years more, and the birds most admired for their plumage will have almost disappeared, as sad havoc has been and still is made among them for ornaments to ladies' hats, etc. The Rifleman—sole representative of the Birds of Paradise—with its lustrous changing hues of green and purple, is now rarely to be found, except in the far north, where the bushes are yet uncleared The brilliant orange and black of the Regent Bird is

more common in London streets than on the Clarence River, and the many tinted Dragoon birds are also fast perishing for the same reason. The sweet little Pink-headed Dove, with its glossy skull-cap of satin, fares no better; and even the tiny warblers are vanishing fast from the bush, though common in the gardens. As regards the game birds, which have been grievously thinned, we think it probable that many species now scarce will multiply again. There are still some magnificent Bustards—by some called Turkeys—and very large-sized Snipe are pretty abundant. Some well-to-do farmers are attempting to preserve a fair head of game birds, especially Quail and the Bronze-wing Pigeons. The fruit-eating Pigeons are expected to disappear with the beautiful "brushes" where they find their food, and the Snipe (splendid fellows, almost double the size of the English "whole snipe"), will be confined to the marsh lands. Nearly all the water birds will probably keep their footing. The Teal, the Black Duck, and the "Whistler," take kindly to large open tanks and reservoirs. There are already in Australia and New South Wales a few English Pheasants, and to these are added the Francolin of the Cape and the beautiful California Quail, and also the numerous Japanese species of Pheasants, which will probably do better in that soil and climate than the English.

Two characteristics of the birds of Australia and New South Wales are especially worthy of notice—their want of song and their playfulness—we had almost said their love of fun. It is, however, true that song birds, so numerous in England, and tolerably numerous in the United States, are a very small class in Australia. There is a "Blue Thrush," common in the scrub, which has a sweet though monotonous song. So have some of the delicate little warblers. But the one notable exception to the general rule of songlessness is found in the well-known Australian Magpie, a black and white bird, closely resembling its saucy English namesake in hue and habits, though not in shape. He can pour forth as clear and fine notes of melody as the English Blackbird:

"The mellow blackbird fluting in the Elm."

This Magpie is more precious as a songster because he is of a sociable turn, and loves to haunt the abodes of men. The Australian Butcher Bird has a very sweet pipe, but it is rarely heard in the bush, though it is much cultivated in captivity. Australian birds generally seem to have a word, a phrase, a mimic utterance of some familiar sound, rather than a song. Others utter a note as an echo of some familiar sound. The Bell Bird, for instance, frequently deceives by his clear, metallic call, exactly like the stray tinkle of a solitary sheep bell, and it always announces where water is near. The note of the "Coachman" is still more whimsically suggestive, accurately resembling the "whish" of a long lash through the air, when whirled and not cracked. One of the Fruit Pigeons again, when feeding at his leisure, utters from time to time a solitary "Oh!" in a tone suggestive of human mockery. Many of the Australian birds are known as good mimics when domesticated, but some of them are so in their wild state—the Lyre Bird, especially, whose beautifully curved tail-feathers have cost him as dear by their classical contour as their golden crests did Solomon's favorite Hoopoes, as a thorough mocking-bird. But the queerest of mocking-birds, though in a different sense, is that

strange creature known as the "Laughing Jackass," in form a huge Kingfisher, but in plumage much like a Jay. He is called sometimes the Australian Dacelo. For reckless, rollicking joyance, with a dash of elfish malice, there is nothing like his laugh. But let a snake or a lizard glide through the grass under his perch, and he drops on the enemy with a stroke of the bill so heavy and sudden that he generally has it his own way in the after struggle. The stately Blue Crane, known as the "Native Companion," will stand by the hour on one leg, with all the gravity of the heron, or a stork on a Dutch chimney stack. A similar mania for strange attitudes possesses the Mooruk, the Casawary of North-western Australia. It seems to have a notion of astonishing somebody or something, not only by dancing and jumping, but by a sort of charge at full speed toward any creature in its neighborhood. Just when you would expect to see a collision, or at least a vicious peck, this bird pulls up short, his neck effaced, his head in the middle of his breast, with the long dark hackles ruffled up all around like the snaky tresses round the Gorgon, or the rays round the sun's droll face in a village sign. The Bower birds have a different notion of amusement, more like that of a fashionable lady who makes her apartments showy with all manner of strangely assorted nic-nacs, and then gives a dance or drum to her admiring friends. They inlay a small patch of ground in the bush with a quaint variety of ornaments, often brought from great distances, and even (though their general habits are very shy), from the habitations of man. Shells, bright leaves, and berries, ends of colored worsted, showy remnants of colored stuff, and even fragments of china and glittering metal, are laid down as a sort of fancy carpeting. They are very playful and active in all their movements in and about their nests and arbors of boughs and twigs, through which they make arches. The adult males have a rich court suit of purple-black satin; the quieter plumage of the matrons is mottled with green, brown, and yellow.

The Lyre Bird shows a similar gamesomeness. But no traveler in the bush can help being struck by the restless vivacity of the Australian Mina bird, popularly known as the "Old Soldier." This is the commonest bird in the bush. He is rather larger than the American mocking-bird, with a handsomely-shaded buff coat, dark skull cap, and powerful bill, thick at the base and fining rapidly to a sharp point—a comely bird enough, but with an air of vulgar impudence like that of the London or English sparrow, now becoming so common in some of our largest American cities, and in San Francisco. This "Old Soldier" is full of fun, but it is the fun of a schoolboy, full of mischief and practical jokes. His diet combines seeds and insects. He is deemed uneatable, and therefore unmolested. He is strong and quick on the wing. They are the most provoking birds that can be met with. When they can find no other "diversion," they get up what looks like a free fight among themselves. Our next paper will be more concerning the game birds of this singular portion of the globe, or to point out species uninteresting to the sportsman, but easily tamed, and for vivacity and cleverness hardly to be surpassed as pets.

In Java a fruit tree is planted on the birth of each child. In Biscay a landowner is obliged to put down two plants for every tree he fells.

ABOUT THE WEATHER.

BY METEOROLOGIST.

We are all aware how intimately the degree of moisture in the air is connected with the weather, and that warmth and moisture are the primary conditions of vegetable life. On these two principal forces hangs almost entirely the distribution of plants over the earth. The animal world follows the plants, since the vegtable feeders are directly, the carnivora indirectly, connected with determinate formations of plants. So that heat and cold are not the only consequences of the position of the sun in regard to the earth; but we also find depending upon solar influences the very existence of life itself. The raging hurricane, which hurls immense objects and weights through the air down to the invisible labor of the most minute Infusorium—the hoarse murmur of the Chilian Pine and the low whisper of the northern Birch — the roar of the lion, the slayer of the innocent gazelle, even to the pipe of the mouse-hunting screech-owl, whose discordant note the awakened sleeper's superstition interprets as "komn mit, komn mit" (come with me) — all acknowledge the energy of the mighty god of day. But to come to the effects of the weather personally upon ourselves, and to state more definitely what we understand by the weather—and nothing actually so deeply affects our bodily and mental life as this. Who can say his health is absolutely sound, when he thinks of the complicated nature of our vital processes? Need we point to the influences of the weather on those whom health is imperfect; how dependent all those affected with chronic diseases are for their comfort on the condition of the weather? Every one knows the old proverb, "Man is his own calendar." The continually annoying sensations in a diseased joint, a wound, or the surface of an amputated limb, even when the individual is otherwise perfectly healthy, indicate the changes occurring in the weather. Perhaps there is a shade of mind for every shade of alteration in the weather, which may be discovered by the influence on the nerves, on those objects with which it is so continually in hostile contact. How much does climate affect nations. There we see an effeminate race: the despot reveling in every sensual pleasure, the princes all-powerful, the pariah oppressed and trodden down, superstition instead of enlightened faith, mere mechanical life instead of mind. Here a mighty people proud of their own power, where, as the poet says, "Liberty walks unhindered to the poorest huts, and scatters wealth over the favored plains." Let us, in short, review in one glance, the gay Tahitians, the dull Fuegians, the formal Chinese, the roving Bedouins, the child-like Hindoos, the manly English, the abstracted Germans, the utilitarian Yankees, and we find that all these, and the thousand other varieties of human nature, are fundamentally dependent on, or promoted, or affected, by the weather—and let us not overlook ourselves, the Californians. Who does not attribute our energy, vitality, health, and elasticity of spirits, to the bracing, stimulating, and genial nature of our climate, especially on this peninsula, situated with the great ocean and its breezes on one side, and the tidal waters of its magnificent bay on the other. In our regions, as in others, it is the wind which, changing according to its various directions, brings us clouds and sunshine, warmth and cold, rain, and very rarely, snow and hail, calm and storm, and through all these, impresses upon the general

character of the season, and upon the people of a country, the individual peculiarities which we call weather. All these different phenomena—and, above all, the wind—are merely alterations, various conditions of combination, rest and motion of the subtile matters which surround us, and which we name the atmosphere.

We must confess that so far as questions of natural science are concerned, we can not look upon the Bible as any great authority, and, therefore, believe that, in that passage, with many others of that character—"The wind bloweth where it listeth, and thou hearest the sound thereof, but canst not tell whence it cometh and whither it goeth," addressed itself to a very circumscribed condition of humanity in an uneducated century. We believe now, most certainly, by meteorological researches and scientific deductions, that we know whence the wind comes and whither it goes. We now know pretty well how winds are caused, the expansion of air by heat, the nature of our atmosphere, the formation of clouds, the unequal distribution of heat, the alternations of storms and calms, the origin of trade winds, properties of the polar and equatorial currents, the zones of constant and changeable weather, and their laws of change, etc.

PRACTICAL USE OF LEAVES.

BY A BOTANIST.

There are two facts in the functions of the leaf which are worth consideration on account of their practical bearing. The food of plants is, for the most part, taken in solution, through the roots. Various minerals—lime, silex, alumina, magnesia, and potassa—are passed into the tree in a dissolved state. The sap passes to the leaf, the superfluous water is given off, but not the substances which it held in solution. These, in part, are distributed through the plant, and, in part, remain as a deposit in the cells of the leaf. Gradually the leaf chokes up, its functions are impeded, and finally entirely stopped. When the leaf drops it contains a large per cent. of mineral matter. An autumnal or old leaf yields, upon analysis, a very much larger proportion of earthy matter than a vernal leaf, which, being yet young, has not received within its cells any considerable deposit. It will be found, also, that the leaves contain a much higher per cent. of mineral matter than the wood of the trunk. The dried leaves of the Elm contain more than eleven per cent. of ashes (earthy matter), while the wood contains less than two per cent.; those of the Willow, more than eight per cent., while the wood has only 0.45; those of the Beech, 6.69, the wood only 0.36; those of the Oak 4.05, the wood only 0.21; those of the Pitch-pine 3.15, the wood only 0.25 per cent. *

It is very plain from these facts that, in forests, the mineral ingredients of the soil perform a sort of circulation; entering the root, they are deposited in the leaf; then, with it, fall to the earth, and by its decay they are restored to the soil, again to travel their circuit. Forest soils, therefore, instead of being impoverished by the growth of trees, receive back annually the greater proportion of those mineral elements necessary to the tree, and besides, much organized matter received in the plant from the atmosphere; soils, therefore, are gaining instead of losing. If owners of parks, or groves, or plantations,

*See Doctor Grey's "Botanic Text Book," an admirable work, which every horticulturist should own and study.

for neatness' sake, or to obtain leaves for other purposes, gather the annual harvest of leaves, they will, in time, take away great quantities of mineral matter, by which the soil, ultimately, will be impoverished, unless restored.

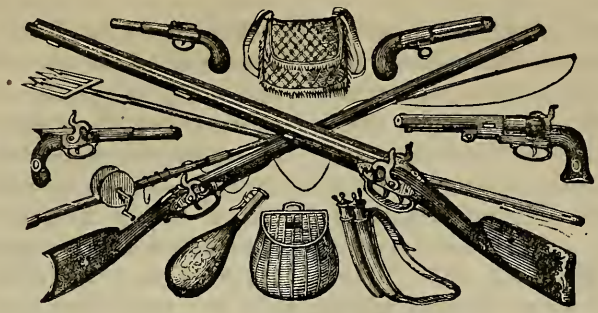
Leaf manure has always been held in high esteem by gardeners. But many regard it as purely vegetable substance; whereas, it is the mineral manure that can be applied to the soil. What are called vegetable loams (not peat soils made up principally of decayed roots), contain large quantities of earthy matter, being mineral, rather than vegetable soils.

Every gardener should know that the best manure for any plant is the decomposed leaves and substance of its own species. This fact will suggest the proper course with reference to the leaves, tops, vines, haulm, and other vegetable refuse of the garden.

The other fact connected with the leaf, is the function of exhalation. The greatest proportion of crude sap which ascends the trunk, upon reaching the leaf, is given forth again to the atmosphere, by means of a particularly beautiful economy. The quantity of moisture produced by a plant is hardly dreamed of by those who have not specially informed themselves. The experiments of Hales have been often quoted. A Sun-flower, three and a half feet high, presenting a surface of 5.616 square inches exposed to the sun, was found to perspire at the rate of twenty to thirty ounces avoirdupois every twelve hours, or seventeen times more than a man. A vine with twelve square feet exhaled at the rate of five or six ounces a day. A seedling Apple-tree, with twelve square feet of foliage, lost nine ounces a day.* These are experiments on very small plants. The vast amount of surface presented by a large tree must give off immense quantities of moisture. The practical bearings of this fact of vegetable exhalation are not a few. Wet forest lands, by being cleared of timber, become dry, and streams fed from such sources become almost extinct, as civilization encroaches on wild woods. The excessive dampness of crowded gardens is not singular, and still less is it strange that buildings covered with vines, whose windows are choked with shrubs, and whose roof is overhung with branches of trees, should be intolerably damp; and when the good housewife is scrubbing, scouring, and brushing, and nevertheless marveling that her house is so infested with mould, she hardly suspects that her troubles would be more easily removed by the axe or saw, than by all her cloths and brushes. A house should never be closely surrounded with shrubs. A free circulation of air should be maintained all about it, and shade trees so disposed as to leave large openings for the light and sun to enter. Unusual rains in any season produce so great a dampness in our residences that no one can fail to notice its effect, both on the health of its occupants and upon the beauty and good condition of their household substance. But it is a good thing to encourage, and profitable to plant trees in groves, and to make woods in this State, not only for the future timber, but to enrich the soil with their leaves, or to use their leaves for manure for other lands or gardens, as well as to create and attract rains and moisture as an antidote against droughts, or for shelter against high winds.

*Lindley's "Horticulture," p. 42-44. Grey's Botany, p. 131.

Japanese lacquer is extracted from a tree, and while soft is a rank poison.



Rod and Gun.

DOVE SHOOTING IN NEVADA COUNTY.

We accepted an invitation to a day's shooting with the Grass Valley Hunting Club, at the close of last month, and confess we enjoyed the Dove hunt to its full measure. This club dates way back into the early California days, and first went by the name of the Frog Club, instituted by Mons. Chavanne, a most genial and whole-hearted Frenchman, who some fourteen years ago amassed a competency in quartz mining near Grass Valley, and had returned to *la belle France*, to enjoy the fruits of his labor. He was now on a visit to his old friends (and they are many and dear ones) and was one of the party on this day. Some twenty odd persons participated in the out-door sport, all arrangements being under the special care of Messrs. Hall and Fryer, of the Fryer Noble Metal Mining Company, to whom we are indebted for the very enjoyable time we have had in the foothills of that region. We were on the ground early in the morning, and about half of the party dispersed over a circuit of several miles, returning at nine o'clock with a mess of over a hundred doves. They were in prime condition, but rather wild, and after the most careful manipulation of our cook, A. Dibble, Esq., of Grass Valley, ably assisted by Mr. Hall, were brought upon the table in a most appetizing manner. It was a royal feast—but of course we were hungry. Taking our rest during the noon hours we again went forth to the hunt and returned with perhaps one hundred more birds, and some squirrels for our afternoon meal at four o'clock, which we enjoyed in the shape of a relishing stew. Hon. Wm. Watt presided on the occasion, and with wine and wit, as side dishes, we must permit our readers to imagine the good things that were said and done at that glorious meal, save the tribute paid to the departed comrades by the cook—who on this occasion was permitted to take a seat at the master's table—which, for masterly and affecting language could not be excelled. Here we met the pioneers of twenty or more years, here we saw the tearful and affectionate expression of feeling, as reference was made to those who had gone before, and here we saw how the stalwart men had formed a most lasting friendship, which we hope and believe will extend to that other and far better world.

THE GAME AND FISH LAWS.

The following presents in the most condensed form, all the laws relating to the preservation of game and fish. It contains the gist of these laws, as amended by the last Legislature, 1875-6, and its production here is the result of careful and laborious research:

It is unlawful to kill elk, deer, mountain sheep or antelope between the first day of January and the first day of September in any county in this State. (Penal Code, Section 628.) Amended: Except that in Nevada county, it is unlawful to kill them between the first day of February and the first day of August. (Statute 1874, page 80.)

Every person who shall take, kill or destroy any of the animals herein mentioned at any time, unless the carcass of such animal is used or preserved by the person slaying it, or is sold for food, is guilty of a misdemeanor. (Penal Code, Section 628.)

It is unlawful to kill quail, partridge, grouse or any kind of wild ducks, in any county of this State, between the 15th of March and the 15th of September, with the following exceptions: In San Bernardino and Los Angeles they shall not be killed between the 1st of April and the 1st of August; and in Lassen, Plumas and Sierra, quail, partridge and grouse shall not be killed between the 15th day of March and the 1st of September, nor wild ducks between the 15th of March and the 15th of August; and in Siskiyou, sage hens and prairie chickens shall not be killed between the 1st of April and the 1st of August. (Penal Code, secs. 626 and and 627, amended; Stat. 1866, page 855.)

It is unlawful to catch trout in all the counties of this State between the 15th of October and the 1st of April, with the following exceptions: In Butte creek, above the falls in Butte county, it is unlawful at all times to catch trout until March 1, 1877. There is no law to prevent the catching of trout at any time in Siskiyou county. (Penal Code, sec. 631; Stats. 1866, page 855; Political Code, sec. 19; Stats. 1874, page 87; Stats. 1876, page 725.)

It is unlawful to catch, take, buy, sell, or have in possession, salmon, between the 1st day of August and the 1st day of November of each year. Del Norte, Humboldt, Shasta and Mendocino counties are specially exempted from the operation of this Act, but in Eel river, Humboldt county, salmon shall not be caught between the 25th of November and the 15th of September. (Penal Code, sec. 634, amended; Stats. 1859, page 298; and sec. 19 Political Code.)

It is unlawful to catch, have in possession, or offer for sale, shad, at any time prior to the first Monday in December, 1877.

Any person who buys, sells, or has in his possession elk, deer or antelope, quail, partridges or grouse, mallard, wood, teal, spoonbill, or any kind of wild ducks, within the time the taking of the same is prohibited, except such as are tamed or kept for show or curiosity, is guilty of misdemeanor. (Penal Code, sec. 629.)

Every person who takes, catches or kills any trout by the use of nets, weirs, baskets or traps, is guilty of a misdemeanor. (Penal Code, sec. 638.)

Every person who places or allows to pass into any of the waters of this State any lime, gas, tar, cocculus indicus, or any other substance deleterious to fish, is guilty of a misdemeanor. And every person who uses any poisonous or explosive substances for the purpose of taking or destroying fish is guilty of a misdemeanor; provided that sawdust shall not be deemed a deleterious substance. Any person who shall take, catch, or carry away any trout or other fish from any stream, pond or reservoir belonging to any person or corporation without the consent of the owner thereof, which stream, pond or reservoir has been stocked with fish by hatching therein eggs or spawn, or by

placing the same therein, is guilty of a misdemeanor. (Penal Code, section 635—amended.)

California Indians taking fish for their own subsistence are exempted from the penalties prescribed in sections 631, 632, 633 and 634.

Any person who shall set, use, or continue, or who shall assist in setting, using or continuing any pound, weir, or set net, stake net, trap, or other fixed or permanent contrivance for catching fish in any of the waters of this State is guilty of a misdemeanor. Any person who shall hereafter close or keep closed, or in condition to catch or ensnare any shrimp, any pound, weir, seine, stake net, trap, or other fixed or permanent contrivance for catching the same, placed in the waters aforesaid, is guilty of a misdemeanor. Any person who shall draw or shall assist in setting or drawing any net or seine for the purpose of taking shrimp in any of the waters of the State, at any time between the setting of the sun on the evening of each Saturday and the rising of the sun on the morning of the succeeding Monday, is guilty of a misdemeanor. Any person who shall draw or who shall assist in drawing any net or seine for the purpose of taking fish in any of the waters of this State, the meshes of which are less than one and one-half inches in size, is guilty of a misdemeanor; provided, that nets with a mesh of a smaller size may be used in the catching of shrimps. Any person who shall cast, extend or set any seine or net of any kind for the catching of fish in any river, stream, or slough of this State, which shall extend more than one-third across the width of said river, stream, or slough, at the time and place of said fishing, is guilty of a misdemeanor. Any person who, by seines, or any other means, shall catch fish so small as to be able to escape through a mesh one and one-half inches in size, or the young fish of any species, but which, at the time of capture, are too small to be marketable, and who shall not return the same to the water immediately and alive, or who shall sell or offer for sale any such fish, is guilty of misdemeanor. One-third of all penalties recovered under this section shall be paid to the informer, one-third to the District Attorney of the county in which the case is prosecuted, and one-third to the school fund of said county. Provided, that nothing in this section shall be construed to affect any special laws now in force in this State for the preservation of fish; provided, that in the waters of Carquinez straits and Napa river set nets and stake nets may be set and used of meshes not less than two and a half inches. (Penal Code, sec. 636, amended.)

Every owner of a dam or other obstruction in the waters of this State, who, after being requested by the Fish Commissioners so to do, fails to construct or keep in repair sufficient fishways or ladders on such dam or obstruction, is guilty of a misdemeanor. (Penal Code, sec. 637.)

It is unlawful to catch fish in any private waters without the consent of the owners thereof. (Stats. 1869-70, page 664.)

It is unlawful to take fish from Merritt Lake by any means except hook and line. Set nets, night lines and crawls are prohibited. No wild birds or other game may be taken from Lake Merritt, or within a distance of one hundred rods from high-water mark upon the adjacent lands. (Stats. 1870, page 325.)

It is unlawful to use nets or seines in Stockton or Mormon slough in San Joaquin county. (Stats. 1854, page 191.)

Every person who, in the counties of Santa Clara, Contra Costa, San Joaquin, Santa Cruz or San Mateo, uses or distributes phosphorus upon any land or ground, between the first day of March and the first day of November in any year, is guilty of a misdemeanor. (Penal Code, sec. 630.)

Every person who, in the counties of Santa Clara, Santa Cruz, San Mateo, Monterey, Alameda, Marin, Placer, Nevada, Plumas or Sierra, at any time, takes or catches any trout, except with hook and line, is guilty of a misdemeanor. (Penal Code, sec. 632, amended.)

It is unlawful to hunt or shoot game within the limits of private enclosed lands in the counties of Alameda, San Mateo, Marin, San Bernardino, San Diego, Colusa, Sacramento, Sonoma, Nevada, Humboldt, Los Angeles, Santa Barbara, Contra Costa, San Luis Obispo and Mendocino. (Stats. 1874, page 792.)

It is unlawful for any person to catch fish in the waters of the San Antonia creek, in the county of Alameda, by the use of seines, nets or weirs. (Stats. 1875-6, page 362.)

FLY DRESSING A DESIRABLE ACQUIREMENT—SALMON FLIES.

BY PISCATOR.

Take a No. 7 salmon hook, also a piece of your strongest and roundest gut, make a loop around a piece of strong wire, or anything similar, and tie with well-waxed silk the two ends securely on the under-side of the shank, leaving the loop only to project and sit, when flat, at right angles to the bend; begin to dress by tying in the tail-tuft, then your tinsel and the point of your hackle, which must be long and well tapered; twirl your first-colored dubbing on your silk and wrap it up, next the other colors, as you require, up to the shoulder, which should be left full, leaving sufficient of the shank to tie on the wings and the head; by means of your tweezers or pliers wrap your tinsel twice round, close to the tail-tuft, having previously cut off the superfluous parts, then rib it evenly and firmly up the body to the shoulders and there fasten it, cutting off what remains; next take the root of your hackle in your tweezers and rib it evenly and firmly between the tinsel up to the shoulders, and make it rather fuller there and fasten it off, cutting away what remains of the root; take one wing and tie it on one side firmly, and then the other on the other side; tie in a peacock's herl for a head and wrap it three or four times, then fasten all off by a loop-knot or two very securely; pick out the dubbing and hackle and trim them neatly; set the wings, and the fly is finished.

If you do not use a peacock's herl for a head, wrap securely with your silk, and finish off by varnishing it.

If your fly is not to be hackled up the whole length of the body, and you use floss silks instead of dubbing, dress it in the same way until the body is formed, then put in your hackle feather for the legs, round the shoulder frill, then tie on the wings and head, and the fly is dressed.

Be sure if you make your wings of various colored feathers, to have them all ready arranged before you begin to dress.

We would recommend, as a very great improvement in the form of a salmon fly-hook, that it should be made with a loop at the end of the shank of the same wire as the hook—an arrangement which will obviate all chafing of gut-loops as at present used, and be

stronger. This would not add anything to the weight, and the flies would all have good and secure loops, as long as they lasted. It might be made, too, rather of an oval form, standing endways from the shank. The fly would thus look neater, and the line would always draw truer from the hook. Very fine flies, and all the best kinds of fishing tackle, and guns, etc., can be obtained at Wilson's on Clay, and Liddle & Kaeding's, on Washington streets.

SHAD.

Shad is a good fish—one of the best. And the rivers cannot be overstocked with them for the reason that they run into the sea in their first year and return only to spawn.

Some four years ago the California Fish Commissioners caused 45,000 young shad, brought from the hatching ponds in Connecticut, to be placed in the Sacramento river, and it is now known that their plant is a success, as shad have been caught down the coast as far as Wilmington, and up the coast as far as Oregon, while a dozen or more full grown have been taken out of the Sacramento river—three large ones having been caught close to this city while running through the break in the Yolo levee. The knowledge of the success of this first plant gave joy to the Fish Commissioners, and they ordered a car load, say 3,500,000 of young shad for this year, but the late warm weather at the East destroyed the eggs and the order could not be filled.

The United States Fish Commissioners were, however, kind to California, and although they could not, for the reason named, fill but a few of their orders for shad, and these few only partially, they brought to this State 120,000 of these young fishes, which were placed in the Sacramento at Tehama last week.

These shad will supply the whole Pacific coast, as they will run from this river into the sea and thence into other rivers, and hence none have been taken to Oregon, nor do we know that Oregon has any organized commission to look after her interest in this matter. But these young fishes could not, it is thought, be taken to Oregon in any case. They are so tired after they reach here after their seven days' journey, that another day's travel might kill them. The water has to be changed often on the way, for the little ones being so numerous soon exhaust it of fish food, and they have to starve until another supply of fresh water is furnished them. Those in charge of these delicate little beings keep on hand during the journey across the continent a supply of hot irons and ice with which to maintain the water at a given temperature, and so careful were they of the charge that not over a thousand died on the journey.

Nothing, we are told, could exceed the delight of these little things when at this city they were changed from the Truckee water, which is so barren of fish food to the Sacramento river water, which is known to be rich in fish food. They dashed through it in search of food in the liveliest manner imaginable, and sported like little things to whom new life had been imparted.—*Sac. Bee.*

DR. HITCHCOCK'S FISH PONDS.

Dr. G. K. Hitchcock, of this city, and father-in-law of Howard Coit, Esq., at his country residence in the Napa valley, has utilized a picturesque mountain stream, flowing near his door, in the propagation of lake and brook trout, salmon, etc. A portion of the

stream has been diverted from its channel, and a series of small ponds constructed beneath the dense shade. These ponds swarm with splendid trout of from six to eighteen inches in length, each pond containing fish of nearly the same size. He feeds them on minced liver, and some of the fish are so tame that they will take food from the hand of their keeper. A huge trout, two feet in length, known as "Ben Butler," obtained his cognomen in this way: the keeper, while dishing out the daily rations to his finny family with a spoon on a certain occasion, this specimen of bad manners and fishy greediness leaped from the water and seized the spoon. One of the most interesting features is the hatching process, which is performed in covered boxes with riffle bars, something like a sluice box, through which a small quantity of water is permitted to flow. Here are thousands of the Spring hatch, from one to two inches in length. Among the fry the spirit of cannibalism prevails to a great extent, the fish of an inch in length making "no bones" of swallowing his fellow of three-fourths that length.

The work of fish culture with Dr. Hitchcock is purely a labor of love; but he has amply demonstrated the possibility of turning our mountain streams into profitable and health-giving food.

A BAD FISH LAW.

The law passed last winter to prevent the destruction of fish is working a great hardship in this county. The expense incurred under it already is in round numbers $1,000, and that is the sum total accomplished by it. The law provides that one-third of the revenue derived from fines shall go to the informer, one-third to the Prosecuting Attorney, and one-third to the School Fund. When the Chinamen are arrested, the company bring over a prominent lawyer, and bully the authorities by saying that they "will not pay one cent of the fine; the men may stay in jail, at the expense the county; they will appeal," etc. Onerous fees are incurred by each arrest. Under this state of things, the Board of Supervisors appeared before Justice Hughes last week, and prevailed on him to inflict the minimum sentence —one hour's imprisonment—on a party of eight Chinamen who had pleaded guilty to fishing with stakes. And in these cases the District Attorney agreed not to claim his fees. It is suggested that a good way to beat these flippant evaders of the law would be to arrest every man connected with the fishery, and if they did not pay their fine let them remain in jail, feeding them only bread and water. This would be good, if the fees did not bankrupt the county, but they probably would. The law will no doubt be repealed by the next Legislature; but in the meantime the taxpayers are likely to be bled to an appaling extent to pay the fees incurred by prosecutions. New applications for warrants are already before the Justice, if indeed they have not now been issued. —*San Rafael Journal.*

Intelligence of a Trout.—That fish possess intelligence is beyond doubt, as the well known fact of carp coming at a given signal to be fed proves. The following anecdote of a trout, given in the *Field*, a Chicago paper, is worth relating: Its place of abode was under a stone in a small pool, immediately below a wooden bridge, over which the path led from the house in which we reside to the garden. It was a pleasing amusement for the boys to feed the

trout with worms, which were readily procured in the garden; and the trout was fed accordingly, and soon learned to come out from below the stone and seize the worm thrown into the pool, whatever number of spectators might be close at hand on the bridge, and although some of them might be a little noisy. But it was thought proper to try a trick upon the poor fish, and present him with a very small, long radish instead of a worm. Out came the trout at once, the radish in shape and color being quite like a worm, and caught it ere it reached the bottom, and quickly spat it out again, and retreated to the shelter of the stone. Once or twice afterward, the trick was successfully repeated, but the trout soon learned to distinguish a radish from a worm, and ceased to come out for one, although prompt enough in coming for the other.

Quails for Italy.—Signor Felippe Piazza, Consular Agent for Italy, who resides at San Diego, passed through Washington a few days ago, en route for Rome. He revisits his native home, and improves the opportunity by taking with him a collection of quails from the Pacific Coast, which he will present to some Acclimatization Society in Italy. He hopes to create a demand for them, and to stock Italy's mountain valleys with these choice birds. He has cages of three varieties—the common California quail, Mountain quail, and Arizona quail. Signor Piazza will also talk to his countrymen about the wonderful fertility and productions of California. His experience in the State renders him competent to do this to our advantage. He has been engaged in silk culture, as well as other agricultural pursuits, in Southern California, which is the "Promised Land" of the mulberry.

California Quails as Domestic Fowls.—Mr. James Littlehale has for a year or two been raising quails in a very successful way. He recently set fifty quail eggs under a hen, and three days since, thirty-eight of the liveliest bumblebees ever seen were hatched out. They seem to take particular delight in their big mother, gathering around her constantly, obeying her call and taking the food she scratches for them, while she is the proudest old hen that ever laid an egg or raised a family. Mr. Littlehale has, besides, thirty or forty grown quails that keep the family in eggs, which, although small, he asserts to be of finer and richer flavor than any other he ever ate. The quails are of two species, the mountain quails, brown, with white and black spots, and the valley quails, bluish slate color, with black tufts on head, breast and wings. —*Stockton Independent.*

Gordon Setters.—Mr. Harry Babcock of San Francisco, Cal., has purchased a splendid brace of black and tan Gordon setters. One of the brace is Monarch, a prize winner at the last Springfield Bench Show. The other, Rake, is an extra fine young dog. These dogs are now on the route to San Francisco, and will doubtless prove an acquisition to the fine stock of the State.

Selected Articles.

HOW TO TAKE CARE OF BULBS.

As soon as their beauty of flower is over, we always cut off the flower-stems just below the lowest flower, and for this reason:—The hyacinth and the tulip both seed freely, particularly the latter; if the bulb is forming seed, its strength is wasted in a great measure by that process; whereas, if the flower-

stem is cut off, the bulb has nothing to do but prepare itself with the vigor for blossoming in the ensuing year. We pay great attention to the protection of the leaves of both hyacinths and tulips, and never allow them to be interfered with until nature indicates, by the decay of their points, that the bulb is preparing for rest. We then follow a course with both hyacinths and tulips which we believe many do not; that is, we take them up before the leaves are quite decayed, and for this reason—we believe that both of them, after the bulbs have attained this period of growth, are only weakened by remaining in the ground, because the offsets are living upon the parent bulb, and consequently weakening it for the flower of the following year. If a cultivator wishes for stock, he should let his bulbs remain until the leaves are quite decayed. If he wants his bulbs to flower in beauty again, he should follow the practice above mentioned.

When taken up the bulbs should be removed to a shed sheltered from the sun, but free to the air, and any earth adhering to the fibres or roots should remain for some time; after two or three days they should be looked after, and the loose earth shaken from them; and, as the leaves decay, they should be occasionally removed. We have generally placed our bulbs at first on the ground, in the tool shed, and as they got dry removed them to an airy shelf. When the leaves are nearly decayed, we place them in very shallow baskets, and allow as much air as practicable to be between each root to harden them, turning them every two or three days. By this treatment, and rubbing off any portion of mould attached to the bottom and sides, they are in a fit state to be placed for the summer in a dry room; and, by a little occasional attention, the rough and the outside coat will, by a gentle side-pressure of the thumb, be effectually removed, and exhibit the appearance of the bulb clean, smooth, and in good condition. This operation is best performed in the end of August; and at that time remove the remains of such parts of the root of the former year as may not have dropped off previously to this time. It is hardly necessary to state that any bulb in an unsound state, either from appearance or decay, or from having been injured in taking up, should not be put with those intended for future planting.—*The Garden.*

R. B. BLOWER'S RAISIN-MAKING.

We recently spent an hour at the home of Mr. R. B. Blowers, of Woodland, Yolo County, and secured from him much information concerning the grape and raisin business. Mr. Blowers is not so extensive as he is thorough in his work. He has spent time, labor, and means in his work, and has been abundantly rewarded for his expenditure. He stands the equal, if not the superior, of any man in the United States in producing raisins, and it has been decided that his raisins are superior to any in the Eastern market, or we might say, in the world. He recognizes but one variety of grape—the Muscatel—as pre-eminently a raisin-grape. Of this variety he has about 25 acres, and about two acres in other choice varieties to the number of 25.

There is method in all he undertakes, and he first studies the art of production. He prunes his vines tolerably early, and believes in systematic irrigation. Not content with the liberal supply of water which nature gives during the winter, he taps the canal, fills the ground full of water, and then again

after the rains, on or about the first of June. This water serves two purposes. It destroys the insects that infest the soil, and adds at least one-third to the production, both in quantity and quality. This he did last winter, and the masses of bunches and clusters which weigh down the vines at this time evince the wisdom of this work. His vines promise a yield at least one-third greater than ever.—*Yolo Mail.*

HOCK WINES.

The term Hock, by which all Rhenish wine is designated in England, is derived from Hockheim, near Castel; but the district that produces the choicest wines lies between Bieberich and Asmannshausen, extending northward as far as the Rauenthal, close to Schlangenbad. Here is the Johannisberg, with its famous cellars, where you may drink wine at eighteen and more florins a bottle; more inland the Steinberg, whose vineyards bear the appropriate designations of "Golden Cup" and "Rosegarden," and where the vine was first cultivated about 1177 by the monks of the adjoining monastery of Eberbach, a stately building, but seldom visited by the tourist, though the lover of choice wines ought instinctively to be drawn to it; for here in its vaults are the "Cabinet" cellars, where specimens of the best vintages since the year 1706 are stored up in mighty casks, each cask furnished with a bright brass tap. Double walls and shady groves inclose the Cabinet cellars, and their treasures of Rudesheimer, Hock, Hattenheimer, Liebfrauenmilch — what a poetic name for wine, and especially Rhenish wine, which is indeed milk for the aged — Marcobrunner and Steinberger. The ancient monks were great lovers of good wine, and also good judges, and it is upon the monks of Eberbach that the time-honored anecdote of the key with its leather label, which gave to the wine the twang of iron and leather, is rightly fathered. The ancient refectorium of the monastery also deserves attention. Since the year 1617 the recesses between the fourteen columns with exquisite capitals, which support the roof, and which anciently contained altars dedicated to various saints, were turned into receptacles for wine presses; and where once the hideous representation of the mythical blood of some fabulous martyr was worshiped, we may now behold and taste the golden drops of the real lachrymæ Christi. To the north of the Steinberg is the Rauenthal, producing a wine which excels even the famous Johannisberger. At the Congress of Princes, held at Frankfort in 1863, Rauenthal wine at eighteen florins the bottle was served; and when the corks were withdrawn its fragrance filled the lofty hall of the Romer. Either by a dispute about tithes, or in consequence of the French invasion, the gathering of the grapes in the Johannisberg vineyards was deferred in the year 1811 until the grapes had apparently been almost destroyed by frost and wet. But Messrs. Mumm, the wholesale wine merchants of Frankfort-on-the-Main, purchased from Marshal Kellermann—on whom Napoleon I. had bestowed the beautiful domain of Johannisberg—the vintage which had already been given up as lost; and the "edelfaulen" grapes of that vintage laid the foundation of the great wealth and flourishing business of the firm Mumm. For it was found that the frost eliminates the watery particles of the grapes, leaving behind the saccharine and alcohol, whereby what is lost in quantity is made up two or threefold in quality.

The vintage along the whole Rhine commences at some time between the beginning of October and the end of November. The opening as well as the closing days are fixed and publicly announced by the local authorities, in conjunction with the large proprietors of vineyards. On the left bank of the Rhine the signal for commencing and ending the day's labor is given by the firing of guns; on the right, by ringing the church bells. Of the ancient vintners' festival—at which a young peasant, astride on a cask, represented Bacchus, and was surrounded by village maidens dressed as Bacchantes—only the memory remains; modern refinement improves all the poetry off the face of the earth. The Rhineland has in these later days been rather fortunate in its vintages: those of 1857, 1858, 1859, 1861, 1862, 1865, etc., yielded such exquisite wines that the connoisseurs were fairly puzzled to which to award the palm. In former centuries a good vintage was reckoned on only once in eleven years; the greater success which now attends the efforts of the vine grower may therefore fairly be attributed to improved methods of cultivation.—*London Society.*

GRAPES AS FOOD.

We have on former occasions referred to the value of fruits as articles of diet, both in health and in sickness. Grapes may deservedly claim a high rank among the fruits in this respect. They contain a considerable amount of hydro-carbonaceous matter, together with potassium salts—a combination which does not tend to irritate, but, on the contrary, to soothe the stomach, and which is consequently used with advantage even in dyspepsia. According to Doctor Hartsen, of Cannes, in France, who has recently contributed an article on the subject to a foreign medical journal, the organic acids in the grape, especially tartaric acid, deserve more consideration than they have generally received. Their nutritive value has, he thinks, been much underrated. It is known that they are changed to carbonic acid in the blood, and possibly careful research may show that they are convertible into fats. Dr. Hartsen thinks that they should be ranked with the carbo-hydrates as food. They have been found a valuable diet in fever, and the success of the "grape-cures" in the Tyrol and other parts of Europe appears to show that they are positively beneficial in other diseases. No doubt the good results of a residence at these establishments are in a measure to be ascribed to the climate and the general hygienic discipline adopted. The advantage does not wholly consist in the fact that so many pounds of grapes are eaten daily, but partly in the fact that other less healthful things are *not* eaten; and pure air and exercise are also important elements in the curative treatment. But after giving all due weight to these allied influences we must allow no small fraction of the beneficial result to the medicinal properties inherent in the grape itself.

We rejoice, therefore, at the increased cultivation of the vine in this country, and hope to see it go on extending wherever soil and climate permit. Let every man who can do it plant a centennial grape-vine, or a score of vines, beside the "centennial tree" which the papers have been advising him to set out. He can eat the fruit of the former sooner than he can sit under the shade of the latter, and his children will bless his memory for both.—*Boston Journal of Chemistry.*

TREE-PLANTING.

The question of forest culture is attracting attention in the Eastern States, and Massachusetts has inaugurated a movement for the encouragment of tree-planting. This was brought about by the publication of a paper by Professor C. S. Sargent, director of the Botanic Garden and Arnold Arboretum of Harvard University, in the report of the Massachusetts Board of Agriculture for 1875. The paper advocated the cultivation of forest trees on poor and worn out lands in the State. It has been reprinted, accompanied by directions for the management of seedling trees, by the Massachusetts Society for Promoting Agriculture, and is distributed gratuitously. Prizes are offered on the following scale: For the best plantation of five acres, set with larch, or Scotch or Corsican pine, $1,000, each acre not to contain fewer than 2,700 trees; for the second best plantation of the same, $600; and $400 for the third best. Six hundred dollars is offered for the best five-acre plantation of white ash, not less than 5,000 trees to each acre; the second best plantation of the same is to have an award of $400. The prizes will be awarded in the summer of 1877. The plantations will return their owners a handsome profit, while valueless land will be turned to account. Generally throughout the United States more trees have been planted this season than in any former year. Centennial shade-trees, Centennial oaks and elms, Centennial orchards, and even Centennial woods, have been in favor. It is said that Michigan has set out 1,000,000 trees this season. The statement may be an exaggeration, but many millions have been planted throughout the States. Congress is endeavoring to stop the wholesale destruction of virgin forests, and Secretary Robeson, of the United States navy, has drawn attention to the value of live-oak for ship building, explaining that it is the best timber for that purpose in the world. Mr. Robeson points to the rapid deterioration of vessels built of any other kind of timber as a proof of the necessity for conserving oak trees, along the coast line at least. The rapid disappearance of our great Western forests must result in producing serious climatic changes unless timely precaution be taken to plant timber on a large scale.

TUBEROSES.

To make them *grow* is easy enough; but to make them *blossom* to the top of the spikes is another affair. The first requisite is sound, healthy tubers; the others are rich soil, abundant heat for the roots, and plentiful watering.

In selecting the tubers take such as are bright, large and solid, with no old dried root at the bottom. Examine carefully the crown; if it is black in the centre the flower germ is dead, and it will produce nothing but leaves. Pick off all offsets; they weaken the plant.

In potting it is the common practice to use five-inch pots, but Rand recommends seven-inch, and cites Buswell to sustain the recommendation. Two inches or more of well-rotted cow manure should be placed in the bottom of each pot, then fill to the top with soil composed of light loam, sand and old manure. The addition of a little pulverized charcoal is an improvement. Having filled the pot insert the tuber just deep enough to cover all but the tip of the crown. Then shake the pot gently to settle the contents.

If one has an active hot-bed the pots may be plunged in it to their rims and

covered with tan; but in the absence of such convenience, a box of fresh stable manure in a barn or other out-building will furnish the necessary heat to start the roots growing. The writer has had satisfactory success in starting tuberoses by burying the pots in a heap of fermenting hops from the brewery. In a week to two weeks, according to the heat, the green shoots will appear; then give more light, air and water. If the pots are in a hot-bed, it is better to let them remain until the buds begin to appear on the flower spike. Then remove them to the piazza, lawn or garden bed. In the latter situation the pots may be plunged to the rim, or if it is not later than July, they may be turned out into the soil. They should be given a warm sunny situation; the hotter the better. The late blooming plants may stand out until the approach of frosty nights, when they must be brought in-doors. A warm, dry greenhouse is the most congenial place, but with careful attention they can be made to bloom in a warm parlor, until late in autumn. The usual time from planting the dry tuber until the flower spikes are in full bloom, is about sixteen weeks. This varies with the amount of heat.

Water plentifully. From the first appearance of growth until the last bud expands they should never be suffered to flag for want of water. A single neglect in this direction after the flowers have begun to open, may cause the loss of all the expanded buds.

The same tuber never produces flowers but once, and is then worthless. But a mass of bullets will be found clinging around the base. If these are removed, kept in a warm, dry place during winter, and planted out in warm and rich soil in summer, they will become blooming tubers the third year. A box of dry sand in a warm closet is the best place for wintering. They should never be exposed for any length of time to a temperature lower than fifty degrees Fahr., nor planted out in a climate like that of this State earlier than the first of June. A very slight chill will blast the flower germ in the centre of each tuber, and then although it may look fair on the outside it will produce foliage and nothing more.—*Country Gentleman.*

ALMOND CULTURE IN SANTA CLARA COUNTY.

In the southwestern portion of this valley there are several quite extensive orchards of the almond tree, which, so far as I have observed, are doing very well. Of these, the orchard on the Spring Brook Ranch, near Los Gatos, is the most prominent as to the size, location and thorough culture, as far as my observation has extended.

While driving in this neighborhood last week I was so attracted by the beautiful dark green appearance of this plantation, the uniform size of the trees in their straight rows, and the general neatness of the whole place as seen from the road, that I opened the big gate and drove down the avenue through the orchard to the dwelling house, which is pleasantly located about half a mile from the road at the foot of the hills, and near the fine springs that have suggested the name of the ranch. Here under the shade of some fine trees in the yard I had the pleasure of meeting the proprietors of the property, Messrs. Gardner & Neff, of Placer county, from whom I received the following information in regard to their Almond enterprise.

The orchard, which is of the Languedoc variety of Almond, covers an area

of one hundred acres, and numbers 20,000 trees. Although only two years old from the nursery last winter, they are so large and well grown as might well surprise any one that might see them, not acquainted with the wonderful productiveness of our climate and our soil. The whole plantation is on gravelly, though level foothill land, and the cultivation has been thorough, not a weed or blade of grass could be seen from the drive. Mr. Neff informed me that they have their men go through the whole plantation six times a year with the most approved tools for cultivation. By this frequent disturbance of the soil moisture is retained near the surface of the land the whole summer through.

It would seem that a few more years will settle the question as to whether Almond culture can be made profitable in this portion of the valley, if indeed there remains any question on the subject. Everything so far looks favorable for the best results. The trees are healthy and grow remarkably well under good cultivation without irrigation, and come into bearing very early, as may be seen by many of these young trees. The proprietors estimate the crop of nuts this year at 10,000 pounds —pretty good for trees less than three years old from the nursery. The only drawback to realizing large crops every year is late spring frosts, but in this locality the probabilities are that no serious trouble will come from this source. There are several other Almond and Walnut orchards, in this neighborhood, which I wish to notice in some future letter.—*G. W. M. in Rural Press.*

THE largest Banana plantation in the United States is near Silver Lake, Florda, having 10,000 bearing plants.

CALIFORNIA FRUIT IN EASTERN MARKETS.

A new branch of trade is likely to attend the display of California wonders at the Exhibition. The markets of San Francisco and Sacramento are constantly glutted, and the fruit-growers determined, while arranging for their Centennial display, to find outlet in Eastern markets. They sent Mr. Earle to this city to investigate and report upon the feasibility of such an undertaking. Mr. Earle found retailers charging $1.50 a pound for hot-house Grapes, and that a good field was opened, which, like the banana trade, would itself create a demand. The preservation of the fruit is no longer an obstruction to the accomplishment of their project, as refrigerators have by recent inventions been brought to such perfection that Grapes can be brought here in ten days with the bloom still upon them and sold by the retailer profitably at the rate of twenty cents a pound, quite a reduction from the charges for hot-house Grapes. All fruit is sold in California by weight. Plums, Apricots, and Grapes will be first sent to Philadelphia—Grapes with which those of Almeria or Malaga can hardly compare. They will be sent in refrigerator cars that are guaranteed to keep them in perfect condition for a month, and as an evidence of the earnestness of this project one of our transportation companies is reported to be building one hundred refrigerator cars for the California trade. In two years it is presumed that the California fruit trade will form an important business interest in Philadelphia, and arrangements have been made by which regular shipments will commence next spring. The firm interested in this venture has secured a building on Delaware Avenue, the

lower portion of which they propose to transfer into a refrigerator, and expect not only to keep large supplies of California fruits, but Bananas, Pine-apples, etc. A car-load of California Pears is to be sent through in September, and within two weeks a car-load of Grapes will arrive, which will effectually settle the question of the practicability of the enterprise. So confident are the projectors of their success that within two years it is heralded that fruit trains will leave the Pacific Coast daily for the East, and that in another year two or three trains of twenty-five cars each will leave every week. Peaches have been already brought here from California, and sold at $10 a case, which contains about 200 peaches. The trade is likely to commence in earnest next year with a shipment of Apricots and Peaches about the middle of June. Early varieties of Plums and Peaches will follow, and about the first of July the shipment of Bartlett Pears will likely commence. By the 1st of August it is expected to send Grapes here, such as have never been seen in these markets, in clusters weighing from six to eight pounds. Almonds and raisins, upon which large duties for importation are paid, can be furnished from California at less prices than Malaga and Almeria fruit are sold. The results of experiments thus far made satisfy the fruit-growers that in a short time the demand in the East for California fruit will be very great.—*Philadelphia Press.*

GLADIOLI—SUGGESTIONS.

Gladioli do not need to be staked, except to support them in case of exceptionally high winds. Especially is this true where they are planted as closely together as they may be without detriment. The leaves of the Gladiolus are not very ornamental—the only word that can justly be spoken against this splendid flower; but where each plant is tied to a stick, its appearance is still further marred. Not at least is it necessary to support them until the buds begin to break. Then a light, unpainted stick—almost a switch indeed, if it can be stuck in the ground without breaking—suffices. Garden stakes in common use are much larger than necessary. We do not know that, until we have tried it, how slight a support will hold plants during the winds of summer. The bulbs are not, as a rule, planted deeply enough, though this must, of course, be varied to suit the soil. For large bulbs in sandy soil, six inches are not too deep. This secures moisture to the bulbs during droughts, and serves the additional purpose of supporting the stem. If our readers have not planted their bulbs deeply enough, soil may be thrown upon the surface where they are massed, thus producing the same effect.

Where droughts prevail, drenching the beds with water and covering with grass will improve the flowers and prolong the flowering period, though where they are growing in full sunshine, such heat as has prevailed for two weeks past, whether the ground has been moist or dry, will scorch the buds or wither the petals in a day. Yet we have never found that the Gladiolus thrives best in the shade or partial shade. The finest displays we have ever seen were upon rich sandy soil in full sunshine. The leaves and corms will stand both sun and drought—it is the flowers alone that suffer.

We remind our readers that now is the time to mark flowers for seed, or to cross selected flowers with a view of producing finer strains and more pleasing colors and markings.

TREES.

The prevalence of an epidemic in our city should cause every citizen to avail himself of every sanitary measure that may contribute to the welfare of his household. An abundant growth of trees is one of the most powerful promoters of health yet discovered. It has been asserted that the death-rate is wonderfully decreased in large cities where they have been profusely planted. Since the re-creation of Paris its death-rate has fallen from one in thirty-four to one in thirty-nine. This is attributed to the immense number of parks in which it rejoices, as well as to its boulevards, thickly planted with trees. The gases which the human system rejects are eagerly absorbed by these purifiers, which, in turn, gratefully give forth the oxygen which is the life principle of the human lung. Almost every home in the city is provided with a little square yard, back or front, in which should flourish either trees or those vines and plants especially adapted to the absorption of malarial gases. All that low land once known as Happy Valley, together with the flat region around Mission Bay, is calculated by its nature to produce malarial fever—that insidious enemy which slowly and insinuatingly saps the life and energy. The streets in this portion of the city extend along blocks, and blocks of hard plank pavement, unsheltered and unsightly. The contents of the gutters, subject to the full action of the sun, give forth odors unwholesome and unpleasant. If every householder would plant but a half-dozen trees, or even less, we should have long avenues, beautiful, healthy and comfortable. Telegraph Hill, with its bleak, scarred side, is a sorry sight for a stranger to behold upon first entering our city; but might easily become a beautiful mass of waving, living green. Trees, in this climate, grow swiftly and thriftily. They are cheap enough to be obtainable by the poorest, and the labor of putting them in the soil is certainly not great. The idle and the careless may be unmoved by any desire to beautify their city or to make it comfortable with shelter, but the fact that trees will affect the mortality of the people should move them to a serious consideration of the matter.—*Alta.*

THE BLACKBERRY.

The blackberry requires nearly the same treatment as the raspberry; but being a more rampant grower, it should have more room, and needs more pruning and pinching. The distances of the rows may be six to eight feet apart, and the plants, if kept single, two feet in the row. Sometimes they are allowed to grow thickly or in a continuous line, in which case they should be kept well cultivated and properly pruned. Constant cultivation is always better than much manuring.

Pruning the blackberry is commonly but little understood. We hear complaints of the rambling and straggling growth of this bush, extending across alleys, tearing dresses, at the same time proving unproductive. This is owing to a neglect of summer pruning. As soon as the new shoots have reached two and a half or three feet in height, the ends should be pinched off with the thumb and finger, which will cause the protrusion of the laterals. These in turn are to be pinched off when they have grown from twelve to eighteen inches. It will be necessary to pass along the rows every two weeks in doing this work, as new shoots will be constantly thrown out during the entire

summer. The plants being thus kept within bounds will present neat, compact, and productive bushes, instead of the unproductive stragglers as if left untouched.

Kittatinny—Large, sometimes an inch and a half long, oblong, ovate, glossy black; flesh moderately firm, nearly sweet, rich, excellent. Canes very vigorous, quite hardy, very productive, ripening at the north early in August. The best family blackberry. The berries become duller after picking and less showy in the market.—*Thomas' American Fruit Culturist.*

Correspondence.

ASCENT OF GREY'S PEAK IN COLORADO.

Ed. Horticulturist:—"Once upon a time"—and that, too, when the beauty and resources of Colorado had hardly gained their subsequent appreciation and sympathy, which were destined to create an enthusiasm unequaled by any country in the world—it being the fashion to climb Grey's Peak, every one who could do so had made the trip, and those who did not had been set down at once as unfashionable. So, to avoid that terrible calamity, we concluded to go and scale the height.

At five o'clock P. M., five of us started on horseback, Charlie Utter, the guide, leading the way, dressed in his appropriate suit of beaded buckskin, having more the appearance of a young poet, with his handsome face, big blue eyes, and long auburn curls, than the noted trapper and guide of the West, and the favorite of the tourist. Having had a lovely day up to the hour of our departure, our spirits were suddenly dampened by finding the sky overcast, with the appearances of a shower in prospective. However, we were not to be disheartened by a sprinkling of rain, and by the time we had reached the "Crow's Nest," a large brick building situated on a rocky bluff overlooking the town, the shower had passed entirely away, leaving nothing as a reminder save the purified air and the glittering rain drops resting on every leaf and twig. The sun was again shining in all its wonted radiance, warming up the atmosphere, and lighting up the whole valley as far as the eye could reach with almost indescribable beauty.

Our route, which lay along the beautiful valley between Georgetown and Bakersville, is grand and picturesque in the extreme. As we rode leisurely along, enjoying ourselves to the utmost, the sky, gradually donning her evening mantle of crimson and gold, displayed one of the most gorgeous-hued sunsets I ever beheld. We had not long, however, to enjoy the contemplation of nature in the twilight, for, their being no moon till near midnight, we were after a short time left in almost total darkness.

Jogging patiently along, after a somewhat wearisome ride of four hours we reached the "Kelso House," at the foot of the range, where we lost no time in refreshing ourselves with an excellent supper, and after desiring our landlady to awaken us at two P. M., we retired to our several rooms and necessary repose, preparatory to our morning climb. The allotted time expired all too soon, and, at three o'clock we were ready to start, making an imposing appearance, having overtaken a number of gentlemen out in pursuit of pleasure who gladly joined our party. The late rising moon was now pouring her soft silvery rays over the sleeping world, the numerous patches of snow scattered over the surrounding mountains glistening and sparkling like giant pearls in the crown of night. As we

were climbing upward, the light, fleecy clouds scurrying across the sky overhead, the continually changing position of objects and outline, prevented anything like monotony from marring the beauty of the scene. We reached the top about ten minutes before sunrise. Our guide, thoughtful as well as handsome, brought out from some unsuspected quarter, a huge bundle of fire-wood, a commodity we had already begun to feel the need of, and a hamper of refreshments, very grateful to us after our brisk ride in the keen morning air. The reddening horizon signaled the coming of the god of day; the tops of the higher mountains were thrown into bright relief in the morning light, that only deepened the darkness and gloom in the gorges and valleys below, rendering them almost frightful in their great depths and distance from the dizzy heights on which we were standing. The sky, becoming gradually a deeper and more vivid crimson, threw the heights into still greater relief, and Grey's Peak, being the centre of this giant circle of Nature's antemural sentinels, stood out yet more boldly against the Western sky. Then, as the sun rose higher in the heavens, the hazy and indistinct atmosphere yielded at last to the fervent rays, and a flood of brilliant sunshine illumined the whole scene. Words are inadequate to describe the enchanting loveliness of such a view, which could not fail to impress all with a sense of man's insignificance. Colorado has been rightly named, by those who know and love her best, the "Switzerland of America." No matter where you go, you will find but one Colorado and but one Grey's Peak. In no other country will be found the same combination of the elements of beauty as here, where Nature, in wildest flights of sublimity and grandeur, presents a picture of bewildering beauty and proportion. The warm hazy atmosphere and golden skies of Italy, the rugged grandeur of the snow-clad Alps, and the fertile valleys of the New World are all represented here in a panoramic immensity of space. We advise all true lovers of Nature to improve their first opportunity of witnessing from the summit of Grey's Peak a sunrise among the mountains. After taking a last long look we reluctantly turned away with a sigh of regret, and sadly began our journey home, each busy with his own thoughts, and each one resolved to repeat the pleasant experiences.

GEORGE EMMET.

Editorial Portfolio.

OUR FRONTISPIECE.

Chinese Primrose (*primula sinensis*), a green-house flowering plant, which thrives admirably well everywhere on this coast. As a window plant it has no superior, and produces its bright charming flowers all the year around. The newer varieties produced of late in European nurseries are very much improved in color, size, and form, and are considered indispensable. No plant requires less attention, and but few will give more satisfaction to the amateur.

There are also the double varieties of the Chinese Primrose, which are the most elegant of the class. They are, however, quite rare here as yet, and considerable difficulty is experienced in their propagation. However small a space of room you may have for house plants, be sure and grow one or two of the Chinese Primroses.

CALIFORNIA VEGETABLES.

Our warm friend, Agapius Honcharenko, of Ukraina, in Alameda County,

has sent us a monster Squash, measuring 56 inches in circumference, and weighing 50 lbs.; a gigantic Sunflower, 44 inches in circumference, making a spread that would answer well for an umbrella; some Berkshire Challenge Cucumbers, of delicious flavor, and which have gained many prizes in England; a lot of General Grant Tomatoes, and some of the finest sugar table Corn and Nutmeg Melons we have ever tasted. Mr. Honcharenko's place is located in the high foot-hills, and on account of the moisture his land receives from the summer fogs of the Pacific Ocean, irrigation is not necessary, as is proved by these luscious mammoth vegetables, which did not receive a drop of water other than the dew from heaven.

CATALOGUES RECEIVED.

"Descriptive Catalogue of Fruits, and Abridged List of Plants, including Green-house, Hot-house and Bedding Plants. No. 1." From Ellwanger & Barry, Mt. Hope Nurseries, Rochester, N. Y. The eminence and correctness of this popular and long established firm is so well and broadly known that comment beyond this from us is unnecessary.

"Annual Descriptive Catalogue of Bulbs and other Flowering roots, with Directions for their Management." From J. M. Thornburn & Co., John St., N. Y. This also is one of our oldest firms in the above line, and needs but little commendation from us.

"Wholesale Price List of Grape-vines, Fruit Trees, etc." From T. S. Hubbard, Fredonia, N. Y. This catalogue is accompanied by very good testimonials regarding his grape-vines, small fruits, evergreens, etc.

"Retail List of New, Beautiful, and Rare Plants." From William Bull, King's Road, Chelsea, London, S. W. This is very handsomely illustrated with about one hundred splendid cuts of trees, plants, and flowers from all parts of the world.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

In the two last papers on the above subjects we referred to the successful cultivation of the true English Gooseberry, free from the mildew, both in Napa Valley and in a certain locality in this city. As this success is a matter of much importance in a fruit which is both useful and delicious, we have thought that a few more remarks on its cultivation and management would not be out of place here. First, we will state that it is a practice too common in pruning Gooseberries to let them branch out with great naked stems, suffering them to remain in that state for by too far long a period. When that is already the case, they should be cut down near to the ground in about the beginning of December in this climate, and this will make them throw out strong healthy shoots which will bear fruit the second year. Gooseberry-bushes, in general, bear their fruit on the second year's wood. Care should be taken in summer to keep the middle of the bush clear, to admit a free circulation of air into them; leaving the finest and strongest shoots from four to eight inches distant from each other. This will help to ripen and harden the wood. It is a practice with some to shorten the shoots in the fall or winter pruning; this should be always near to a wood-bud, which may be known by its being single, whereas fruit-buds are in clusters. The shoots

may be shortened to eight or ten inches, according to their strength. Some leave them at full length for two or three years, thinning out those that are superfluous. Always leave a proper number to be trained up between the full length shoots, to succeed them when they are tired of bearing; then cut the old ones down to the young ones that are to succeed them. By these means you will always keep the bushes in a constant state of bearing. You may observe that those branches which were cut the first year, will in the second throw out short spurs, which will produce the fruit; and these by no means should be cut off, unless the branches are in a sickly state, and require to be cut close down when the bushes are overloaded with fruit. It will be necessary to cut out a good deal of the old wood, to assist Nature to recover herself after producing so great a quantity of fruit as she sometimes does, when the branches are bent down close to the ground. In California this, it is true, is not of so much importance as in the East, on account of our long dry spell in summer and part of the fall. The above remarks will entirely apply to the cultivation of our American native kind—the Houghton—and its varieties, and the crosses between it and the English sorts. Some attention also might be well paid to the cultivation of early and late kinds. It is a practice with some to clip the tops of Gooseberries with a pair of garden shears, as they would clip an Osage Orange or other hedge, but this we by no means approve of, as the fruit will not be half the size, nor of so fine a flavor, as when the bushes are kept clear of superfluous wood or branches close together. Care should be taken in spring and summer to stock or grub up all the suckers from the roots of the bushes, leaving their stems clear and unencumbered. It is very well to support some of the longest outer branches with stakes, and so tie their branches to them. Gooseberries in this State are not yet infested by any insects or caterpillars as they are in England and in the Eastern States, which there frequently devour both the leaves and fruit. Gooseberries, especially the English, are well worth paying attention to, as they go some way to supply the table till the later fruits come in.

The Currant is another very useful small fruit. Their pruning is very similar to that of the Gooseberry. It may be begun in the month of November or December, and continue through our winter. The sort best adapted to our coast is the Cherry Currant, among other good qualities it having large size to recommend it. Currants should never be left too full of wood; and a great deal depends upon their management in summer, to have strong and fine wood for the following season. If they have been neglected for some time, and suffered to run up to long naked wood, they must be cut down near the ground; they will then set forth strong shoots. In the winter pruning the finest and strongest shoots must be preserved, leaving them from nine to eighteen inches long, according to their strength, and from eight to ten inches apart, and as regular as possible from top to bottom of the bush; taking care to cut out all dead and weak shoots. The single stem or tree shape is not so good for our climate as the bush form. The bushes should be from three to four feet high. Pay some attention in summer, and keep the middle of the bush somewhat open to admit the air and sun, preserving the strongest and finest shoots that are nearest the stems or base. Be particularly careful to

pull up all suckers at the roots of the bushes, and keep them as clean as possible, otherwise the suckers will prevent the sun and air from penetrating to the roots, and greatly weaken the bushes.

From inquiries of fruit growers and dealers we find that from nearly all parts of the fruit growing portions of the State, especially Napa, Sonoma, and other valleys, the crop is, doubtless, upon the whole, the largest ever grown. The prices, as a consequence, are small, and profits, in many cases, nothing. If the production had been only half, or less than half, it would be more profitable to the cultivators. All kinds of fruit are vastly abundant. There was but little injury by frost, except to a few vineyards in low or peculiar localities. The remarkably parching weather in June injured somewhat the Apple orchards, but not sufficiently to lessen the crop perceptibly.

One fruit grower from Napa Valley said "he would have been glad to have disposed of his Peach crop at half a cent a pound, but he preferred to feed the fruit out to his live stock rather than feed the commission merchants with it." He also said, "There is no money in raising Peaches at less than three cents a pound. The expense of gathering, boxing, shipping, and commission is so great that they can not profitably be sold for less."

The wine men talk rather discouragingly of the Grape market. The crop will be very large, and they say they have no room for the wine, their cellars being nearly full now. But it is to be hoped, notwithstanding these facts, that the Grape growers will find a better market for their product than they anticipate.

The yield of all fruits this season being so excessive, it is a wonder to us that the general quality of them is as good as it is.

The organization of the Fruit Growers' Association has been completed, and the Company will soon file articles of incorporation. A large amount of the capital stock has already been subscribed. The Association will be ready to ship Grapes within a few weeks in patent refrigerator cars. The officers of the Grange organizations have been assured by the railroad company that the project which is of such importance to the State will be favorably considered, and every possible concession made. While the shipments of fruit were small and irregular the company could not afford to lower their freight. The Association will not be composed exclusively of Grangers. All fruit-growers are invited to become stockholders. The fruit will be bought from the producers, and shipped by the Association for Eastern markets, where an active demand for it exists. The principal counties from which fruit will be sent are Napa, Sonoma, Yolo, Sacramento, San Joaquin, and Placer. The latter county being remote from San Francisco, and directly on the line of the railroad, will be the heaviest shipper. In the event of the almost certain failure of the Grape-brandy bill before Congress, the price of Grapes will be ruinously low. As before stated, the wine-cellars are full to overflowing, and their contents can not be converted into brandy under the present burdensome tax. The Association hope to be able to net $30 per ton for their Grapes.

The fruit stalls the last of August were lavishly supplied with all seasonable varieties, and prices remained at a very low level, especially for unbroken packages. Grapes were very plentiful, and some of the varieties retailed as follows: Sweetwater and Chasselas, 4c.

to 6c.; Rose of Peru, Black Hamburg, and Black Malvoisie, 8c. to 10c.; Muscat, White, 10c. to 12c. per lb. Late Peaches were coming forward freely, and prices failed to improve. By the basket the best sold at $1 to $1.50. Apples were steady at $1 to $1.75, and Pears at $1 to $2 per box. In vegetables there was no essential variation from last week. The market was still glutted with Melons, and the best sold slowly at the quotations, though an extra fine lot of a light colored variety of the Watermelon brought 50c. to 75c. each. There was a better tone to the Potato market, and prices remained firm at $1.25 to $1.50 per 100 lbs., delivered.

Editorial Gleanings.

About the Wines of California.—Notwithstanding the drooping condition of our wine interests, some of those who deal in and manufacture the article are not wholly discouraged. We had a conversation with Mr. Van Bever the other day upon the subject, and found him far from being depressed. Mr. Van Bever tells us that he has now on hand about 80,000 gallons of wine of last year's vintage, which he is working off. Prices he admits are *very* low, but still he finds sales, and if the quality of the wine is kept up to a good standard. it will finally work its way into public favor, both here and abroad, and we will then have as much business as we want. He especially deprecates, as do all our first-class manufacturers, the making and offering of inferior wines. Far better make it into vinegar, or let the hogs eat the grapes, than put upon the market wines which will bring us into bad repute. Mr. Van Bever has a large claret trade, and will probably work hereafter to make as much of that wine as possible. To make a good article of claret we should have proper grapes, which leads us to ask the question, Why do our grape-growers hesitate in regard to grafting their Mission vines with the Zinfindel or other valuable foreign kinds? But little is doing in brandy manufacture, as the high tariff renders the business unprofitable. —*Napa Reporter.*

Prices of Grapes.—At the meeting of the State Vinicultural Society, Sept. 2d, some statements were made respecting the price of grapes and some reports of sales were made. At St. Helena, a sale of foreign grapes (Thomann's) had been effected at $20 a ton. Some foreign grapes about Oakville had been sold as low as $18 a ton. A sale was reported in Napa, of Mission grapes and others as they run, at $13, but these figures, we are informed, are not to be considered as a criterion, because the grapes were General Miller's, who is not supposed to be so dependent upon his vineyard as most of the grape growers, and is consequently less particular about the price. The purchaser was Migliavacca. It was stated that Groezinger would do little buying; but has already engaged 160 tons at Oakville; no price named. In Sonoma there was very little purchasing—the prevailing price being $15 "all around," Mission and other varieties included.—*Napa Register, Aug. 29th.*

The Orange Moth.—The *Rockhampton Bulletin*, speaking of the prospects of the orange crop, proposes a theory concerning the operations of the orange moth, which, whilst not at all unlikely, will scarcely be endorsed by all the orange growers of Rockhampton. Already the entomologists have crossed

swords on this subject and no one seems as yet a bit the wiser for the controversy. This moth, which it appears is happily conspicuous by its absence in many orchards, unfortunately abounds in some, and wherever it is found, there the oranges are to be seen lying on the ground in dozens, pierced with minute holes, supposed to be the work of these pests. Of the three well-known varieties—*Ophideres fullonica*, *Materna*, and *Solominia*—two are common and the latter is rare in Queensland. According to the *Bulletin* the preponderating opinion is that the moth is not the *primary*, but the *secondary* cause of the destruction, a small insect being the first invader of the fruit, and on this head, the writer says:—"This insect, so it is said, punctures the skin of the orange, makes a bed inside, lays three eggs which eventually produce maggots, and thus makes room for the moth to enter in and to complete the mischief commenced." The question is still open to discussion, and doubtless by the aid of science and accurate observation on the part of orange growers, some definite information on the subject will be forthcoming.

The Action of Frost on Vegetable Tissue.—The way in which frost acts in destroying vegetable tissue, and consequently vegetable life, is yet open to discussion. When the liquid in the structure freezes, it will of course follow the law common in such cases and expand, disrupting the tissues to the destruction of life. The enigma with most persons is how vegetable matter can get through our winters after the sap has been thoroughly frozen, in the face of this law. But it is probable that the sap does not freeze in these cases. A Mr. Piffard publishes some experiments in an English paper, made with the juice of a cabbage leaf. Some juice was mixed with water and put in a bottle, and in another bottle pure water. Both were exposed to a very low temperature, and the cabbage water resisted congelation, while the mere water froze. It thus appears that plants resist frost through their juices, and that the power of resistance is a chemical act not a vital one merely; unless, indeed, life itself be but a mode of chemical action.

Canning Fruit.—Probably no people in the world have so much good fruit as we. We have just now, within a few miles of this place, hundreds of tons of the finest peaches and plums, which, we regret to say, hardly pay for picking and hauling to market; pears are ripening and coming on in the same way, and so of other varieties of fruit. This great abundance stimulates our housewives to unusual efforts in putting up fruits, jams and jellies for winter use. In nearly every house the kettle is steaming, and you see a formidable array of cans, jars and glasses on the shelves. The Cohansey fruit jar, which is of glass, top and all, has been introduced this year, and is already a great favorite; and there are other packages of glass which command attention; and a great many, on account of cheapness in first cost, still use the tin cans and sealing wax.—*Napa Reporter.*

Tomato Vines.—A fruit-grower in Valparaiso, South America, writes to his local paper that he has discovered a singular property in tomato leaves. It appears that having cut down some tomato vines, he used them as a "mulch" around his peach trees. He soon discovered that the curculio, which had been destroying his fruit, had aban

doned the trees surrounded by tomato vines. Following up this accidental discovery, he found the free use of tomato vines proved a perfect protection not only against the curculio, but against other noxious insects. He found also that by steeping in water some fresh leaves of the tomato, and sprinkling the infusion upon other plants, such as roses and orange trees, the innumerable insects which covered them were driven away. We commend this to our horticultural friends.

James Vick, in a number of his *Floral Guide*, says about rust on celery: There are two causes of rust. Celery likes a cool, moist situation, and if a trifle shaded, all the better. If it is planted in an open situation exposed to the sun, it sometimes burns, and this causes rust. This, however, is not the most frequent cause. Celery should neither be hoed nor earthed up when moistened with dew or rain, nor when the ground is moist. It should be done when air, and soil, and plant are dry, otherwise rust is sure to be the result. If the soil is permitted between the leaf stalks or in the heart of the plant at earthing up, rust or rot, or both, is the compensation. This is one reason why we dislike celery of a branching habit, the work of earthing well is so difficult. A dwarfish plant of straight, compact growth, is altogether the safest and best.

Ginseng Culture.—The Chinese have long ascribed extraordinary virtues to the root of Ginseng, it being considered almost a sovereign remedy for various diseases. It is found growing wild in the mountains of Chinese Tartary from whence the Chinese formerly obtained their Ginseng, but the constant drain upon those regions has exhausted the supply, and for many years America has been the only country from which this root could be procured, but the wild plants are becoming scarce, while the demand does not abate. Here is a chance for our horticulturists to introduce a new source of revenue by cultivating this plant extensively. It has been grown in botanic gardens for the past century or more, hence there can be no question about its succeeding under cultivation.

How to Catch Hawks.—As the season is approaching when hawks are most destructive to young poultry, a method of catching and killing these marauders will be in order. It is a well known fact that a hawk will always light on some conspicuous place close to the poultry yard, from which to swoop down on his victims. Taking advantage of this, erect a pole with a flat surface at the top, just large enough to hold a strong steel trap. Fasten this trap by a chain to a staple in the pole, and await results. No bait will be needed, for the hawk will be quite certain to light on the trap and be caught. A gentleman who has tried this method has succeeded in killing all the hawks in his neighborhood, and now can raise poultry without loss except by accident.

Raisin Culture.—R. H. Blowers furnishes us with the following, which gives some idea of the interest which is being taken in the culture of the Raisin Grape in California and in other parts of the United States. He has made during the season of 1875 and shipped to market 1,500 boxes of twenty pounds each, or 30,000 pounds. These raisins were made from the Muscatel Grape, which he cultivates to a standard of per-

fection which could not be easily excelled. He has been called on from far and near for cuttings from his vineyard, and has furnished to parties as follows: To Yolo County, 55,000; Napa County, 5,500; Fresno County, 20,000; Tulare County, 1,000; Solano County, 16,000; other parts of California, 1,000; State of Texas, 500; Mississippi, 100.—*Woodland Mail.*

SOWING FLOWER SEEDS.—Provide a quantity of finely pulverized mold in a basket or barrow, and cover them by sprinkling it evenly over with the hand. Avoid soaking the beds with water until the plants are up. If the surface is likely to become too dry after sowing, which is often the case, put on a thin gauzy mulching. This may be pulverized moss, thin canvas, or even a newspaper. Every person who plants a flower-garden should know the hardy plants, which usually come up soon, and may be sown early, from the tender, which are often more tardy in appearing, and should be sown later. Most seed catalogues designate these separately.

CHIMONANTHUS FRAGRANS.—The Petersburg *Messenger*, noticing a bouquet sent by Mr. Bryant of that city in the depth of winter, refers to this remarkably interesting shrub, and it moves us to repeat what we have before said, that it is astonishing so sweet a thing should be so little known. The buds, cut off and put in water, will expand in a warm room and fill it with fragrance.

CURE FOR THE POTATO BUG PEST.—An ingenious Frenchman on Long Island claims to have discovered a sure means of destroying the Potato bugs. Mix one gallon of prussic acid with three ounces of rendrock; stir well, and administer a tablespoonful every hour and a half till the bug shows signs of weakening. Then stamp on him.

WATER-LILIES may be raised about the house by the following method: Sink in the ground half of an oak cask, and cover the bottom with peat and swamp mud, and then fill with water. Dig the lily roots in the spring, and place them in the earth at the bottom of the tub. No further care is required than an occasional supply of water.

THE battle of the pavements in London has been won by wood, the city engineer having shown in its favor that a horse before falling may be expected to travel on granite 132 miles, on asphalt 191, and on wood 440 miles.

METEOROLOGICAL RECORD,

FOR THE MONTH ENDING AUGUST 31, 1876.

(Prepared for THE HORTICULTURIST by THOS. TENNENT, Mathematical Instrument and Chronometer-maker, No. 18 Market Street.)

BAROMETER.

Mean height at 9 A. M.	30.02 in.
do 12 M.	30.02
do 3 P. M.	30.01
do 6 P. M.	30.00
Highest point on the 23d at 12 M.	30.12
Lowest point on the 29th at 12 M.	29.87

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	63°
do 12 M.	68°
do 3 P. M.	67°
do 6 P. M.	63°
Highest point on the 10th at 12 M.	80°
Lowest point on the 17th at 9 A. M.	58°

SELF-REGISTERING THERMOMETER.

Mean height during the night	48°
Highest point at sunrise on the 22d	54°
Lowest point at sunrise on the 9th	40°

WINDS.

South and south-west on 4 days; west on 25 days; south-east on 2 days.

WEATHER.

Clear all day 13 days; cloudy all day 3 days; variable on 15 days; misting rain on 2 days.

RAIN GAUGE.	Inch.
7th	0.01
14th	0.01
Total	0.02
Previously reported	0.01
Total up to date	0.03

FUCHSIA (TINTED VENUS.)

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. VI. SAN FRANCISCO, OCTOBER, 1876. No. 10.

GARDENING IN THE EAST INDIES, AND BOTANY BACK OF MADRAS.

BY E. J. HOOPER.

Horticulture is seen wherever Anglo-Saxons are, especially the culture of flowers. In India, we are informed by a late traveler there, every railway station has its bed of flowers, pots and tubs of favorite plants, and wall covered with creepers and vines. Nearly every bungalow (country house) has a garden, often well stocked with beautiful flowers and foliage. All large towns have public gardens, which have been introduced through the inherent taste for flowers of the Rajahs (native princes and rulers), or through the efforts of refining Europeans. At Allahabad there are two gardens, both of which possess great beauty, and are always undergoing improvement. In one of them, our informant states that he saw a splendid attempt at bedding with English garden flowers (which are prized more than the tropical ones by the Anglo-Indians, and, of course, have a greater interest for the natives), viz.: Antirrhinums, Verbenas, Petunias, Asters, Phloxes, Stocks, Tagetes, Portulaccas, Gazanias, Pelargoniums, Ageratums, Penstemons, etc.

At Cawnpore there is a very pretty little garden. It is where the great massacre took place. Here is a secluded and quiet spot, with everything as still as death except the gentle breezes blowing through the lofty trees, and the soft twittering of small birds, and the mournful habit of the drooping *Cupressus funebris* around you. This garden is well stocked with foliage and flowering plants, and kept in the finest order. The botanical garden of the north-western provinces of India is situated at Saharunpore, and is about the best in India. The grounds are very extensive, and the botanical collection is rich, especially in the flora of Northern India, and other cool tropical parts. Eucalypti, Mahogany, and *Millingtonia hortensis* grow to an immense size, and the majority of English garden flowers thrive exceedingly well. Lately, the cultivation of *Bœhmeria nivea* has been successfully attempted. The fibre produced by this plant excels all other fibres in strength and beauty, and would undersell all others if an easier and cheaper method could be discovered than the one now in vogue, and experi-

ments are now being made concerning this. It is known as Rhea fibre, or Chinese grass.

Our narrator informed us, also, that he had seen ancient and modern European buildings, Grecian temples, Egyptian pyramids and palaces, Hindoo temples, and the wonderful mosques of the Mahometans; but, according to his idea, all these sink into insignificance before the mighty presence of the Tadj Mahal tomb at Agra. It is built of rose and white marble, literally worked into a lovely picture of flowers, history, and designs, by the inlaying of black marble, jasper, cornelians, agates, turquoises, coral, garnets, porphyry, sapphires, and diamonds. The whole of the Koran is inlaid with black marble, and all the hieroglyphics are done by inlaying. The front of this wonderful tomb is gracefully set off by a beautiful garden, with a stream of water running through the centre. *Bignonia venusta*, *Bouganvillea glabra*, and *B. spectabilis* were splendid in their display of massive blooms. Dracænas, Crotons, Palms, Cycads, Araucarias, and numerous flowering herbs and shrubs, a few coniferæ and umbrageous tropical trees, all tended to lend a charm to the scene. This grand and wonderful edifice was erected by Shah Jehan, as a monument to his much beloved and favorite empress, Moumton Mahal, over 200 years ago. It stands right on the barren banks of the Jumna. In the centre of the large dome the empress sleeps the sleep of death in an elegantly sculptured and inlaid marble coffin, the emperor in a similar one by her side, the whole surrounded by a gorgeous balustrade of sculptured marble.

The Nilgiri Mountains are about 200 miles northwest of the Presidency of Madras, on the Coromandel Coast. Merchants and officers of the Government possess handsome villas on them, and retire during the hottest months to enjoy the healthful atmosphere of these hills and mountains. These mountains rise to upward of 8,000 feet. Botanically, these hills are divided into four tracts, each having its own flora. Back in the forests there are trees which attain an immense size, 200 to 250 feet in height, and of course it is no easy task to obtain their flowers, and there can be no doubt that there are still a good many undescribed.

These forest tracts yield many of the most valuable timbers of the Presidency, of which the following may be said to be the most important: *Cedrela Toona* (White Cedar), *Chloroxy-lon Swietenla* (the Satin-wood), *Schleichera trijuga*, *Dalbergia latifolia* (the Black-wood or Rose-wood), *Pterocarpus Marsupium*, *Hardwickia binata*, *Xylia dolabriformis*, *Albizzia odoratissima*, *Terminalia tomentosa*, *Lagerstromia microcarpa*, *Tectona grandis* (Teak), *Gmelina arborea*, *Phyllanthus Emblica*, *Santalum album* (Sandal-wood).

Above 4,000 feet these forests begin to decrease in size, and toward the plateau they gradually pass into what will be treated of as the *sholas*. The timbers as a rule are not of such good quality as those in the deciduous forests, but there are valuable timbers, of which the following are the chief: *Calophyllum tomentosum*, *Mesua* (Iron-wood) two species, *Hopea parviflora*, *Hopea malabarica*, *Diospyros Ebenum* (Ebony), *Chichrassi tabularisa* (Chittagong wood), *Acrocarpus fraxinifolius* (Red Cedar, or Shingle-tree), *Artocarpus hirsutus*, *Gironniera reticulata*.

Ferns and mosses abound. *Alsophila latebroza*, a Tree Fern, is abundant. Orchids are very poorly represented. There is one species of reed Bamboo (*Arundinaria Wightiana*), and some shrubby Balsams and Begonias.

The grass land of the plateau is covered with many coarse species of grass, which are quite burnt up with the sun and frost in December and January; after the first showers in March the growth is very rapid, and numerous herbaceous plants spring up. The Orchids are very poor compared to those of the Himalayas and Birma, but the following are the best, and well worthy of cultivation: *Dendrobium aqueum*, *Cœlogyna*, *Arundina bambusifolia*, *Cyrtopera flava*, *Cyrtopera fusca*, *Vanda spathulata*, *Vanda Roxburghii*, *Ipsea malabarica*, *Aerides Wightianum*, *Aerides Lindleyanum*, *Calanthe Masuca*, *Platanthera Susannœ*.

One hundred and seventy-six Ferns have been detected on these hills, and probably others as yet only known from other districts will be discovered on the western slopes. Two of these Ferns, *Lastrea scalrosa* and *ferruginea*, are, it is believed, not found elsewhere.

DISTRIBUTION OF PLANTS IN THE WORLD.

BY BOTANIST.

The distribution of plants being dependent on favorable conditions, we must know accurately what the conditions are, if we would understand the nature of the group likely to be found in any given place. There are certain parts of the earth—as equatorial America—that seem especially adapted for forest vegetation; certain others — as the islands of the South Seas—where Ferns chiefly inhabit; and others, where mosses and lichens are most common. The causes are for the most part climatal, though soil has much to do with the determination of the tribes that shall flourish in any district at a given time.

But climate does not depend entirely on latitude, and thus the distribution of plants is not confined to definite horizontal tracts in similar geographical position. Although, generally speaking, the climatal conditions are similar in places similarly situated, this is only the case where there is no great difference of level. On the sides of high mountains within the tropics we may find every variety of temperature, from the hottest and most humid atmosphere to a thin, cold, dry air, like that within the Arctic circle, and quite as cold. We have thus certain limits of vegetation in vertical as well as horizontal space. Warmth and moisture are conditions eminently favorable to plant life, and all organic nature is chiefly energetic where these abound, provided there is no interference of interests. But where there is such interference, whatever be the cause, the species best adapted to the conditions must gain the day in the struggle. Sometimes vegetation advances at the expense of animal life, but elsewhere animal life prevails almost to the exclusion of vegetation. The banks of tropical rivers at low level are examples of the former, and the waters of the ocean of the latter case. Certain kinds of vegetation under certain circumstances will often permanently exclude other kinds.

There are a number of recognized botanical regions in the earth. The number of these regions is large, and not absolutely defined, as botanical authors increase them from time to time, according to the progress of discovery. It is neither necessary nor desirable to trouble the reader with detailed accounts, or mere lists of these, the object of the present article being rather to give a general idea than teach the special facts on which the conclusions

are based. But it will be useful and suggestive to place before the student the outlines of a compact and concise arrangement long ago suggested by Humboldt.

It is assumed in this outline that there are parts of the earth where certain tribes of plants are most at home. Here they overpower all intruders. Hence they are believed to have diverged, entering occasionally adjoining territories, but not conquering them. Each group is supposed to have a place, and for the present each keeps it. How long they have done so, or when their empire will cease, we must not now consider. The former inquiry belongs to paleontology, or the history of past races; the latter is purely speculative.

At present, then, we may say, speaking of lands near the sea level, that first, Palms and Bananas are the plants of the equator, up to 2,000 feet; second, Tree Ferns and species of *Ficus* belong to the tropics generally, corresponding in height at the equator to between 2,000 and 4,000 feet; third, Myrtles and Laurels to sub-tropical regions, 4,000 to 6,000 feet; fourth, evergreen trees to warm temperate countries, 6,000 to 8,000 feet; fifth, deciduous trees, such as the Oak and Beech, and most of the north European trees, to the colder temperate zone, 8,000 to 10,000 feet; sixth, Pines to the subarctic zone, 10,500 to 11,500 feet; seventh, Rhododendrons to arctic latitudes or high elevations, 11,500 to 13,500 feet; eighth and lastly, the Lichens and Mosses, and what are sometimes called Alpine plants, are chiefly met with on the lands around the two poles, or on the highest points of land at which vegetation appears in lofty mountains, between 13,500 and 15,500 feet at the equator.

That this distribution represents important and intelligible facts no one will deny, and it will be evident that the law of distribution is applicable, without much difficulty or error, in the case of mountains of great elevation under the tropics. On the mountains of Mexico, where the Palm flourishes at the foot, the last trees are met with at a height of 13,000 feet. Above them are Alpine plants and Lichens. On the Himalaya Mountains the Birch is found on the north side at 14,000 feet, and the Alpine plants reach much higher.

Although there is a general correspondence, there are causes which produce a marked difference of range in different parts of the world. Thus the Pine, so abundant and characteristic in most parts of the world, and so well defined in its habits, only reaches to 10,870 feet in the Pyrenees, and 6,700 in the Alps. In Lapland neither the Pine nor the Birch rise to 2,000 feet above the sea. So, again, the Rhododendron is found as the last of the shrubs, attaining in the Caucasus 8,000 feet, in the Pyrenees 8,300 feet, in the Alps 7,480 feet, and in Lapland 3,000 feet.

(TO BE CONTINUED).

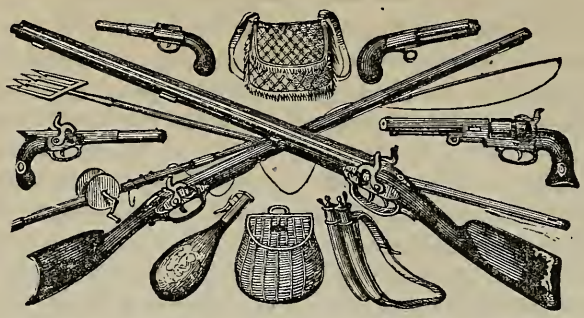
VARIEGATED STOVE PLANTS.

BY A BOTANIST.

Some thirty years ago the species of variegated stove plants was very limited. Loudon, in his "Encyclopedia of Gardening," classes many kinds of stove plants, but entirely omits these. Yet nurserymen then, and for years previously, esteemed variegated plants highly. It was thought quite a hit to obtain a new variegated Elm, Ash, Sycamore, or any other tree, either by seed or a chance spray, with colored foliage. Whenever such a lucky chance happen-

ed, the plant or the bush was immediately propagated by budding or grafting. So it was, also, with shrubs, evergreens, or deciduous trees. In the common Holly they were eminently successful, but in the Laurels and Sweet Bays no permanent success was achieved. The *Aucuba japonica* came to hand from Japan, with leaves already spotted, and a most useful plant it has proved. We have seen some plants of it with leaves nearly green, but such were invariably grown in rich soil, in the shade. This was undoubtedly a natural variegation, and the plants were perfectly healthy. There are also some herbaceous plants with leaves very prettily variegated. This variegation of plants is an exceedingly curious and interesting subject. How is it obtained? What causes it? What process can we take to cause plants, hitherto with green leaves, to change and give us parti-colored foliage? We are quite in the dark on this subject. One point is curious enough. Plants with fine variegated foliage have, with very rare exceptions, insignificant flowers—instance the Holly, the Aucuba, the Croton, and even the far-famed *Farfugium grande*. The flowers are inconspicuous, and, to use a common phrase, are not worth a cent. It seems as if nature, having given these plants beautiful leaves, thought flowers a superfluity; indeed, plants that have sweet, large, showy flowers would not be generally thought improved if they had variegated foliage. We should certainly be shocked, and think it unhealthy, if a Rose-tree produced variegated leaves, or even a Camellia, or Tulip, or Carnation. In fruit-bearing plants, also, we should not be struck with admiration to see a variegated-leaved Apple, Pear, Cherry, Peach, or Plum-tree. Should any one sport into variegation, it would be looked upon as a monster, hardly any longer valuable for its fruit. It would be kept, if kept at all, merely as a curiosity. Thus, we see there are limits even in obtaining variegation, to be consistent with good taste. We now all consider variegated leaved stove as well as many other plants exceedingly beautiful and valuable, and certainly that consistently with the greatest reason. Many of these stove plants are beautiful when in flower, but the greater part of these various lovely and various-colored leaved plants are delightful objects all the year round—a great recommendation, sufficient to induce growers to cultivate them largely; indeed, they are entirely indispensable in every collection. They are, also, a very important item at exhibitions, both at all metropolitan shows, and also at the most distant provincial exhibitions. For decorative purposes, also, wherever there is a stove plant-house they are found in considerable numbers. There seems, indeed, to be at various epochs, a kind of mania for certain plants or flowers. There was once a rage for Tulips, and that to such an extent that it was named Tulip mania or Tulip madness. In pot plants and in gardens in the summer, in Europe, Heaths once were very fashionable, then Orchids, then Ferns, and now these variegated plants are much the fashion of the day, combined with plants that have beautiful or singular foreign-looking foliage. These attractive, variously-colored plants are always happily increasing in most pleasing and impressive variety.

To Keep Fruit.—Beat well together equal parts of honey and spring water in an earthen vessel; put in your Apricots, Plums, and Peaches, freshly gathered; cover closely and they will keep fresh for a year.



Rod and Gun.

THE GRIZZLY BEAR, BROWN BEAR, AND PANTHER.

BY A HUNTER.

During a late visit to the north fork of the Novarro River—a locality well supplied for the delectation of sportsmen with plenty of deer in the redwoods, and brook trout in the streams, and with black bear far from uncommon, though the more formidable grizzlies are now very scarce—our party were sometimes amused while resting of evenings at the pleasant and well-conducted North Fork House, by anecdotes and experiences of hunters and old lumbermen in encounters with panthers and brown and grizzly bears, as well as exploits in the following and killing of deer and elk, the latter animal being now scarcely ever met with in Mendocino, but more common in Humboldt County, further north, and much increasing in numbers still higher up the coast. One of the narrators, who had been in the neighborhood of the rivers running into the Pacific in Mendocino County, at an early period of California's history, informed us that he was once riding on horseback through these redwoods, as he was continually in the habit of doing in connection with the lumber business, when his horse suddenly made a terrific jump on one side of the trail, and the rider looking back, his eyes met those of a very large panther crouching low, apparently for a spring upon him or his horse. The rider in this dilemma continued to fix his steady gaze on the terrible animal, and moved his horse forward, but the beast rose up slowly, followed him and crouched again, both still staring at each other. Then the rider, whose horse had become steadier and less alarmed, took advantage of a short turn in the trail, and whipping his horse forward, at the same time taking his eyes off those of the panther, made his escape in safety. It seems, by this man's account and belief, that generally the moment the human eye is taken off that of a panther, the latter at once leaves his intended victim, and either sneaks or leaps away from him. In the early days of California the settlers used jacks as beasts of burthen, or for packers of merchandise, etc. Sometimes panthers attacked these animals, either in the camps or at pasturage, and it was perfectly astonishing how these jacks would stand a contest with the panthers. The jacks would fiercely fight them with their forelegs and in the most violent and rapid manner, and so defend themselves, and keep the panther from killing them for a long time. These battles were occasionally witnessed by some of the pioneers, but after awhile the jacks were compelled

to succumb to their powerful and more active antagonists, from pure loss of blood in the continual tearing off of their flesh by these persistent attacks upon them.

We were told that within the last year in this locality a large grizzly had been in the habit of destroying the calves, sheep, and hogs of the stock raisers, and this creature had continued his depredations for years, unhurt and unprevented by all the attempts the settlers had made to get rid of him, but at length, about a year since, having seized a hog of a stock man, and leaving a portion of it in a field, he was patiently waited for by several men, in expectation of his returning for the remains of his spoils. He returned and was shot, but only wounded, when he made for a large thicket, where he was finally surrounded and destroyed by many gun and rifle balls. The grizzly, as is well known, is gigantic in size, and terrific in aspect; he unites to a ferociously blood-thirsty disposition (though he sometimes subsists on roots and fruits), a surpassing strength of limb, which gives him almost undisputed supremacy over every other quadruped tenant of the wilderness, and causes, as is continually manifested, man himself to tremble at his approach, though possessed of such splendid and effective weapons as a Remington or improved Winchester rifle. He is remarkably tenacious of life, and on many occasions numerous rifle-balls are fired into him without much apparent injury. Instances were related to us by some of the old hunters we met on our trip, of from ten to fourteen balls having been discharged into the body of one of these beasts before they expired. The chance of killing a grizzly by a single shot is very small, unless the ball penetrates the brain, or passes through the heart. This is very difficult to effect, since the form of the skull, and the strong muscles on the side of the head protect the brain against every injury, except a very truly aimed shot; and the thick coat of hair, the strong muscles and ribs make it nearly as difficult to lodge a ball fairly in the heart. He strikes very violent blows with his fore-paws, and his claws inflict dreadful wounds. Some hunters said that this bear is unable to climb trees like other bears, but others asserted that he will ascend the oaks, though slowly and clumsily, for the acorns, and break off branches so large as almost to ruin the tree. He does not at all times kill his enemies when he has them in his power, and rarely attacks a man unless he comes upon him or a she-bear with cubs, by surprise.

While our party was at the North Fork House, three brown bears were caught by a trapper, in a pen, within two miles of where we stayed. They are quite common in this vicinity, but more so further north, in the immense extent of the redwood forests. They will feed on pigs, and huckleberries and other fruit, and various products of the fields and woods. There are varieties of these animals throughout the United States with different names, as the yellow bear, cinnamon, black, etc., a nomenclature obviously derived from the color of their pelage or skin. The common brown bear of the redwoods is granivorous, feeding sometimes in Anderson's Valley on the corn, and he is a great bee hunter, and voracious amateur of honey. He does not, however, refuse a change of diet, when it offers in the shape of animal food, such as young calves, lambs, sheep, and pigs. Moreover, when he has once addicted himself to this sanguineous diet, he rarely returns to his more innocent veg-

etable regimen, and becomes a very pest to the farmer.

To man, unless pursued and wounded, he is perfectly innocuous, and will, on occasions, if permitted, betake himself to his heels, which carry him off at a far more rapid rate than his singular waddling and awkward gait would lead you to imagine possible. Even when badly hurt he is not dangerous, and though he may charge and make a savage snap at you *en passant*, he is easily avoided, and rarely, if ever, returns to the charge voluntarily. At close quarters he is, of course, an ugly customer, parrying all blows aimed at him with a blunt weapon, or even with an axe, the handle of which he will dash aside, without allowing the head to strike him, with the dexterity of a prize fighter. A tomahawk is, therefore, useless used as a missile, an instrument of no avail against him, while with a good stout bowie knife of two or three pounds' weight, the hunters here have no difficulty whatever in going in hand to hand with the brute while at bay, in order to preserve their hounds from his fatal claws, and yet more fatal hug; nor is it once in a hundred times that their temerity is punished with a serious wound.

The exception to the innocuous character of this beast, is the female with young cubs. She has been known, as we were told by experienced bear hunters, pertinaciously to attack intruders upon the privacy of her young bearlings, and even to climb trees in pursuit of the offender, to the utmost height the strength of the branches will admit, and then, unable to rise higher, to maul and mangle the dependent limbs of the fugitive in her impotent ferocity. Such incidents are, however, uncommon, and rarely take place with men, though children and young lads are not unfrequently thus annoyed in the settlements where these beasts abound. In the redwoods the bear is not much scientifically hunted, for it is very shy, but is mostly trapped, for the purpose of receiving the five dollars reward for its scalp. Sometimes the deer hunters stumble on him by accident while in pursuit of their game, or, falling on his tracks, and hunting him out with one or two steady old dogs, shoot him at a single shot as a matter of business. Occasionally, when they have found his watering places or wallows, such men lie in wait for him in the afternoon, and shoot him from ambush to leeward of his trail. The head of the bear never should be aimed at; in the first place, the animal, when at bay, keeps it constantly in motion, so that it offers anything but an easy mark; in the second, it is so very hard, and of a form so singularly rounded, that unless the bullet strikes it at right angles, on a perpendicular line, it is almost sure to glance off at a tangent, without inflicting a wound. The best places at which to aim are the centre of the breast, if he be coming directly at you; if he be facing you, erect on his hind quarters, a little to the left, and low down on the breast toward the belly; if he be crossing you, below the shoulder, about the arch of the ribs. Never strike, but thrust with a knife, for he will parry the blow. Keep the edge of the blade upward and outward, if you are facing the animal, and forward, if you are standing against his broadside. By this means his paw, in parrying, will meet the edge of the knife, which will probably disable him.

It is stated that immense numbers of salmon are lost every spring in the tributaries of the Columbia River. The rise and fall of these streams are so sudden that millions are left upon the land.

TROUT FISHING—HOW TO FISH.

BY PISCATOR.

Here are a few words about the best method of fly-fishing a river, brook, or streamlet, supposing the angler to be a stranger to it, and that his operations are somewhat interfered with or obstructed by the sometimes unwelcome presence of other competitors for the honors of the day. Perseverance does much by keeping the hook continually in the water. Whether angling for salmon or trout, the chance of getting a rise is much in the favor of the angler who is the most skillful in lightly throwing the fly—which should light on the water always before any part of the line. And this is worthy of every attention—although it is almost unnecessary to point out a fact which is self-evident—that it is impossible for any angler to catch fish while he is merely wandering along the banks of the stream with the flies in his hand, or his line floating in the wind; while on the other hand, it is equally an unprofitable waste of time to keep pottering and thrashing a pool a dozen times over, when the fish in it stubbornly refuse to rise. Every experienced fisher is acquainted with the fact that while the "feed" is completely off one stream or pool, so that not a fish will stir in it, it may happen that the tenants of the next are all on the *qui vive*, and rise at almost every cast. Now, the best plan is to follow a medium course; to fish every inch of water where it is possible for a trout to lie, as they will frequently be found in parts of the water where least expected; and should there happen to be a slight fresh breeze on the stream or brook, the fish will be found to be generally diffused over it, though mostly in rapids, riffles, eddies, and shallower places. But by no means dally over water where there are either no fish or where they will not rise. To be sure, fish that will not rise at all will often take some bait, either on the top or under the surface of the water. The angler, however, with the fly, must try every portion of a stream, step by step, where there is any likelihood of there being fish, and he will soon find out at what particular part of the pool or reach they are lying. There he must continue casting as long as he gets a rise, and even when they cease doing so he had better light his meerschaum, give them a few minutes' rest, and recommence at the top of the river (as trout frequently shift their position within a short time), and go over the whole again. It is evident, then, that the sportsman who merely makes a few casts here and there into the most likely-looking pools—he may be at the top of the stream, while the fish are all lying quietly at their ease near its foot—and on not meeting with a rise, impatiently hoists his rod over his shoulder, and stalks indignantly off in search of more favorable casts, will be fruitlessly spending his time in tramping the banks, or the dry places in the brook, while the industrious sportsman who adopts the other course is filling his creel. The same plan will hold good in all other kinds of fishing, as well as the fly. It is also a needless waste of time to attempt to get before any other sportsman who may chance to have possession of the water, however great an advantage the first rod may have over all that follow; for as soon as he perceives an attempt made to pass him, he will at once hoist the rod over his shoulder, and play the same game. Hence, if both the competitors are of an obstinate disposition, the affair will eventually resolve itself into a pedestrian contest, instead of a day's fishing. The

best plan, then, for an angler to adopt, is to quietly light his pipe, and console himself with the fragrance of the weed for an hour or so (although the writer himself does not particularly recommend tobacco in any form), until the fish regain their equanimity.

In comparatively still and well-fed waters, where the trout are surfeited to repletion with a superabundance of insect food, their tastes are singularly capricious and whimsical, and like all gourmands already over-gorged, they will often disdainfully refuse the more substantial flies, be they ever so correctly dressed, and only rise, apparently, more for the sake of sport than for the purpose of feeding. We have frequently observed them, on such occasions, rise freely at the knots in the casting line, and entirely disregard the most taking flies attached to it. In such cases as this, which happen generally in the summer drought, when the waters are fine, and all kinds of insect food cry "Rise and eat" (like the porkers of St. Salvador, which are said to perambulate the streets with knives and forks ready stuck in their backs), small flies will generally do more execution than large ones. But in rough, streamy rivers, where there is only a moderate supply of insect delicacies, the fish evidently prefer more substantial fare, as here it is a dinner and not a dessert they are in quest of; and the representatives of the larger flies, of the full natural size, will be most in request. In such waters, a large trout will not be at trouble to put his ponderous carcass in motion to capture nearly a nonenity.

A METHOD for economically pressing the juice from Limes is now the great want of the southern counties, the fruit being too abundant for profitable sale.

CONVEYANCE OF LIVE FISH.

We are now beginning to learn that, up to a certain point, the value of water for non-lung-breathing aquatic animals does not so much depend on its amount as upon its distribution in such a manner that it shall absorb the greatest quantity of atmospheric air, or rather of the oxygen which enters into the composition of that air, leaving much of the nitrogen out unabsorbed. The earliest authority for this fact was the late Dr. R. Ball, who, in Bell's *British Crustacea*, records how much better he kept a crayfish (Astacus) in a shallow vessel than in a deep one. In all my aquarium work I keep this law in view, and I regulate the amount of surface of water exposed to air, as well as the actual quantity of water, according to the known requirements of the animals to be kept; and the result is very surprising, both on the health of the creatures and in the saving of the money cost of constructing and maintaining aquaria.

I also apply the rule to the conveyance of aquarium animals. To give an actual example, I find that the following animals and some others may, at certain temperatures, be safely sent from Southend, in Essex, to the Crystal Palace in boxes (or preferably in baskets) packed in damp, freshly-gathered seaweed: 1, nearly all the sea anemones; 2, most of the Echinodermata; 3, a large number of Annalids; 4, many Crustacea; 5, some of the Tunicata; 6, nearly all shelled Mollusca, both univalves and bivalves, and some of the Nudibranchiata; the following fishes: Amphioxus (this once came alive from Naples in a post letter, and four of them so brought are still alive in the Crystal Palace aquarium), plaice, soles, brill, rocklings, eels, gobies, blennies (of three species), sea scorpions.

The explanation of the reason why they so travel is this: They are surrounded with moisture in a sufficient degree to enable respiration to be carried on. Take, for example, any fish so conveyed. It is not immersed in water, but its gills are kept wet by such very thin films of water that their thinness, otherwise shallowness, enables them to be instantly oxygenated by contact with the atmospheric air, which enters the apertures of the containing box or basket, and which permeates the entire mass, and therefore the gill-filaments are kept wet and separate from one another, and the blood uninterruptedly flows through them, and is aerated as it does so, oxygen being absorbed from the perfectly aerated water, which thus does double duty in a measure. I admit that the balance thus maintained is a delicate one, and is easily disturbed by external causes. Thus, a heated atmosphere would cause the moisture to evaporate and the gills to dry up, and the circulation of the blood would be arrested, and the fish or other creature would soon die. So, also, great cold would freeze the gills into a temporarily dry mass, and death would likely ensue. But there is one thing which I do not yet understand, and which I should be very grateful to have explained. It is this, that while many of the creatures I have named will bear the four hours' journey from Southend, some of them will not bear the twelve hours' transit from Plymouth, though equal care be apparently taken with the packing in both cases. But when such packing is possible the gain is enormous in everything. We often at the Palace get a couple of thousand of animals, or more, in packages weighing not altogether half a hundred weight, while if the same animals needed to be conveyed in properly aerated vessels of actual water, such creatures would require a pound weight of water instead of only a fraction of a grain weight to each. The money value of the moist plan is strikingly shown in the instance of shrimps, of which we use about a ton weight every year at the Crystal Palace Aquarium, for feeding purposes; and we require them alive, because many animals refuse to eat them when dead. They cost us, in good condition, about a shilling a quart; but if it were necessary to bring them alive in water, they would cost at least a guinea a quart. — *W. A. Lloyd, in London Zoologist.*

ANGLING FOR EYELESS FISH.

At the Dickinson place, on the Bullard Creek, near Six-mile Station, is a ten-acre field which is nothing more nor less than a subterranean lake covered with soil about eighteen inches deep. On the soil is cultivated a field of corn which will produce thirty or forty bushels to the acre. If any one will take the trouble to dig a hole the depth of a spade-handle they will find it to fill with water, and by using a hook and line fish four and five inches long can be caught. These fish are different from others in not having either scales or eyes, and are perch-like in shape. The ground is a black marl, alluvial in its nature, and in all probability at one time it was an open body of water, on which has accumulated vegetable matter, which has been increased from time to time, until now it has a crust sufficiently strong and rich to produce fine corn, though it has to be cultivated by hand; as it is not strong enough to bear the weight of a horse. While nooning, the field hands catch great strings of delicate fish by merely punching a hole through to the water.

A person rising on his heel and coming down suddenly can see the growing corn shake all around him. Any one having the strength to drive a rail through this crust will find on releasing it that it will disappear entirely. The whole section of country surrounding this field gives evidence of marshiness, and the least shower of rain produces an abundance of mud. But the question comes up, Has not this body an outlet? Although brackish, the water tastes as if fresh, and we have no doubt but that it is anything else than stagnant. Yet these fish are eyeless and scaleless—similar to those found in caves. It is a subject for study, and we would like to have some of our profound citizens investigate it.—*Montgomery (Ala.) Bulletin.*

A NEW CALIFORNIA DEER.

The Hon. J. D. Caton describes in *The American Naturalist* for August, a new variety of the mule-deer (*Cervus macrotis*), for which he proposes the varietal name *Californicus*. Judge Caton first met with it on the estate of Mr. Frost, at Santa Barbara, who is a famous deer-hunter. With him Judge Caton made an excursion into the Coast Range at Gaviota Pass, and secured three bucks. These were evidently a variety of the mule-deer, and not of the black-tailed, having all the distinctive peculiarities of the former. The variety differs from the type in being smaller, of a more decidedly reddish shade, in having a lesser patch of white on the buttocks, and, most prominently, in the markings of the tail. The tail of *C. macrotis* is entirely white except a black tuft at the tip; in the variety a black to reddish-black line extends along the upper side of the tail from the root to the tip. The habitat is not as yet well determined, but Judge Caton thinks it safe to say that this variety predominates in the Coast Range south of San Francisco, which seems to be its northern limit. The Sierras seem to define its eastern limit, east of which it is replaced by the true deer. It ascends to higher altitudes than any other American deer, being frequently found above timber line. Those living in the high mountains are the largest, Mr. Frost killing one which weighed 400 pounds. They are not uncommon, and further information, it is hoped, will soon be obtained of the distribution and peculiarities of this novel variety. A skin and skeleton have been sent to the Smithsonian Institution by Judge Caton.

Correspondence.

STARTING A FLOWER GARDEN.

SUNSHINE COTTAGE,
SANTA BARBARA, Sept. 27.

EDITOR HORTICULTURIST: — Probably there may be some one of your readers who may desire information in regard to starting a flower garden. I will therefore give my experience. It may aid some one, if given a place in the HORTICULTURIST; so I would recommend those intending to cultivate some of our beautiful varieties of plants to start right. If the work depends on yourself, arrange your borders so that you can conveniently work in and around them. I have found it necessary to have all the walks between borders not less than three feet wide. Don't mound your borders up like little hills; they dry out too quickly. When you have the soil well spaded and fine, if possible add a liberal quantity of sand. New soil is generally rich enough at first, and plants will thrive without fertilizers if well watered in warm weather. As

soon as the borders are ready, if small bushes can be procured—say, three feet high and some perhaps a little more than that—place the tall ones in the centre of the side borders, as it is not desirable to have anything tall in front of the house, unless it be a rosary trained to a trellis. By placing limbs or bushes in the borders you can avoid planting too closely. Had I only known it when planting my choice Roses, it would have saved me labor and vexation, for I have many to move. The plants looked so small and the borders so large that I imagined I could still keep adding new varieties; but after only one year's growth I find them embracing each other too tenderly. A Safrano Rose-bush looks loftily down on a Cape Jessamine, and a Salvia is trying its best with brilliant scarlet plumes to hide a Duchess Isabella Rose and a President Grant Carnation. I have removed many that have lost favor, or some that were on trial and condemned by the Judge, and given away. When I sat long rainy evenings culling from catalogues and making up lists, my fancies reached fever heat, and I was ready to take the well-meaning florists' words that all were desirable. Since then I have given away many that were lovely only in anticipation. We must not be guided by florists or amateurs residing in cold climates as to what we shall plant. They are obliged to have the usual variety of annuals, such as Petunias, Phloxes, Asters, etc. How cheap and sorry they look in a border where Camellias, Cape Jessamines, Tea Roses, Tuberoses, and other greenhouse perennials flourish, and where the lovely scarlet Passiflora waves in the warm sunshine from its trellis! Nearly every one plants the time-honored annuals the first year, but let the perennials once open their bright-eyed blooms and emit their fragrance, and away go the annuals over the fence. If you try Pond Lilies, make a little cement pond for them in the beginning; half barrels or tubs do for six months only, or a year at most, and are very likely to get leaky just as the plants are ready to bloom, and blasts the flowers as well as your hopes.

Mrs. G. Edward Childs.

"GUMMING" OF CHERRY AND PLUM TREES.

Editor Horticulturist:—This subject is one that should interest all fruit growers in California—that is to say, all who grow this particular class of fruit—it being one of the few diseases which in this State have to be contended with. I am, however, presuming that there is no known cure—or prevention, which is better—but if there be, doubtless some of the more experienced practical pomologists will publish the fact through the medium of your valuable journal. In the first place, What are some of the primary causes of the gummy excretions so frequently apparent on our Cherry and Plum-trees, but especially the former? As all excretions are formed by the assimilated sap, so, therefore, the exudation must be produced chiefly by the descending current, after it has been elaborated by the leaves. The idea prevalent in many minds is, that the cause is directly, and almost exclusively, an abundance of sap drawn up from the roots in too great a quantity to undergo the change which it is one of the functions of the leaves to perform, and, consequently, works out through the bark. But, it should be remembered, the crude sap is hardly discernible from water, except to the chemical analyst; and it is not until it has passed through the

leaves, and principally through the action of the sun, becomes, as it is termed, elaborated, that it is capable of forming into the crystalized lumps of gum which appear on the surface of the bark. No doubt, when the trees are grown in rich soil, and the roots have penetrated far into the moist earth, the cause is, indirectly, a superabundance of sap, which, being unable fast enough to push its way through the alburnum or sap-wood, forces itself by the medullary rays into the liber, when the two streams meet. The result is obvious.

Another, and I think quite as frequent a cause, is the abominable little pest known as the borer worm. When the bark of some young Plum-trees, which was perfectly unbroken, was cut into, the only evidence that something was wrong being a small quantity of gum on the outside. I found these worms boring in every direction within the inner bark—in fact, in the passage of the descending sap. Of course the fine dust which falls as a result of their labor, chokes up and rots the tender liber; hence, as a natural consequence, the assimilated sap accumulates above the affected parts, and forms into crystals as it gets under the direct influence of the sun. I believe another cause to be, oftentimes, a too rapid growth of the tree, and a greater amount of foliage than it is well for so light wooded a tree as the Cherry to do with. In this case, the leaves (which are the chief attracting power of the roots), are the means of pumping the sap up, as it were, before the vessels are properly formed for its conveyance. Bruises or wounds of any kind, will also be the cause of gummy excretions on these particular trees.

So much for some of the primary causes, but an effectual remedy is not so easy to treat of. When the apparent cause is a superabundance of sap—if the trees are young enough—it would be well to lift them in the winter and root prune them, cutting close back any inclination to form a top. To be on the safe side, they should be thus treated in alternate winters for several years after first planting out. This is, I believe, a sure prevention of the evil from this cause, and, instead of dying off, as they often do when two or three years old, they would live, and continue quite as productive for a very much longer space of time.

If the trees are too large to move, it appears that the only thing to be done is to cut the gum and all decayed parts cleanly out, once or twice in the year if necessary. Of course, it is possible, even in the case of full-grown trees, to root prune them by digging down to the roots, but it requires to be carefully done. For trees attacked by the borer worm, and excreting gum from this cause, I know of no cure, unless it be to watch them carefully, and destroy the worms before they have time to work much harm. Is there a known remedy for trees affected in this way? A pretty sure prevention is to take the trees in hand when quite young, and dress the stem and thickest part of the limbs with a strong solution of lime. But this should only be done when the bark is perfectly whole and sound.

It has struck me since writing the above, that a system of "pinching" the young shoots of Cherry-trees during the growing season would be beneficial, especially to young trees—and likely to act as a preventive to a great extent, of gumming, by checking the growth of the roots.—*L. C., Napa Valley, Cal.*

It is estimated that California consumes 10,000,000 Oranges per annum.

Selected Articles.

OCTOBER.

Sweet is the voice that calls,
From babbling water falls,
In meadows where the downy seeds are flying;
And the soft breezes blow
And, eddying, come and go
In faded gardens, where the Rose is dying.

Among the stubbled corn
The blithe quail pipes at morn;
The merry partridge drums in hidden places;
And glistening insects gleam
Above the reedy stream,
Where busy spiders spin their flimsy laces.

At eve, cool shadows fall
Across the garden wall,
And in the clustered Grapes, to purple turning;
And pearly vapors lie
Along the eastern sky,
Where the broad harvest moon is redly burning.

Ah! soon, on field and hill,
The wind shall whistle chill,
And patriarch swallows call their flocks together
To fly from frost and snow,
And seek for lands where blow
The fairer blossoms of balmier weather.

The pollen-dusted bees
Search for honey-lees
That linger in the last flowers of September;
While plaintive moaning doves
Coo sadly, to their loves,
Of the dead summer they so well remember.

The cricket chirps all day
'O, fairest summer, stay!'
The squirrel eyes askance the chestnut browning;
The wild fowl fly afar
Above the foamy bar,
And hasten southward ere the skies are frowning.

Now comes a fragrant breeze
Through the dark Cedar trees,
And around my temple fondly lingers
In gentle playfulness;
Like the soft caress
Bestowed, in happier days, by loving fingers.

Yet, though a sense of grief
Comes with the falling leaf,
And memory makes the summer doubly pleasant;
In all my autumn dreams
A future summer gleams,
Passing the fairest glories of the present!

THE LAWN.

There is no prettier feature about a dwelling than a nice grassy lawn. There are many of them in San Jose, but generally only in front of the most costly residences. Now there is nothing so very expensive about a lawn as to prohibit people from having them, and enjoying the green carpet where the children can frolic in sportive glee, and the eye can rest relieved from the general glare of the desert brown of the hills and stubble fields at this season. Every household can have its oasis to give life and cheerfulness to its surroundings. Quite as much as they need money to supply necessities, do our farmers and the people generally need to cultivate the æsthetic tastes, and to gain the serene enjoyments of tasteful homes and places which a little time pleasantly given can as well procure as money can. The enjoyment of self-satisfaction arising from such effort is something that money can not purchase.

One of the main necessities for a lawn is plenty of water, for grass can not make a thick sward and keep a fresh growth of living green in our climate, without abundant irrigation. A windmill and water-tank, an artesian well with pipes laid through the grounds to be cultivated, or pipes from a hydrant, are necessary preparations. Irrigation may be applied by flooding over the surface, or by showering. Practically, it makes but little difference which. A soil properly prepared will hold water sufficient to make the grass grow beautifully, if watered thoroughly only once in two weeks. If showered only lightly, once in three days will answer. For economy, the flooding is preferable.

The under-laid pipes may be of wood, with plugs at intervals to draw out and allow the water to flood the surface.

Once prepared, a lawn is no trouble, but a continual pleasure. The grass you will clip from it all the year round will more than pay for all the trouble. Indeed, as an investment, on every farm, a liberal sized lawn can be made to pay by supplying soiling for the cows and horses the year round. A half acre will supply many tons of sweet green feed, if richly dressed with manure occasionally, and well watered through the dry season.

The following are practical hints on making a lawn:

The soil should be deeply and thoroughly pulverized—making it rich with well-rotted cow (the best) or horse manure. If the soil is naturally rich, a good quality of manure will still improve it.

Care should be taken to have a smooth surface—permitting no depressions anywhere, where water might stand. If the lawn is intended to be flat, it should be made as smooth as possible before sown.

A lawn may be made at any time in California, but the most propitious period is from the 1st of September to the 15th of November, or between February 1st and March 15th. If made during warm, dry weather, after the seed has been sown and raked in it should have a top-dressing one inch thick of well-rotted, finely-pulverized manure, which serves to protect the seed during germination and making its first roots. This dressing will stimulate growth of grass at any time, and might be advantageously used no matter at what period seed is sown.

There are several varieties of grass used for the formation of lawns, but the more acceptable are the best quality of Blue Grass sown alone, the same with a proper proportion of White Sweet Clover, and the Mixed Lawn Grass, which is composed, as its name indicates, of several fine grasses mixed in suitable proportions.

The quantity of seed sown should be in the proportion of at least fifty pounds to the acre. The seed can not be sown too thick, but if sown too light the work must be done over again. The point is to get a thick stand to withstand our dry climate, and keep the lawn close and preserved from bunching.

To make a fine, thick, velvety lawn, the grass should be cut once a week, or oftener, according to the season.

For heavy soil it is a good plan to cart sand to mix with the top-dressing of manure. Also, after the soil is manured and thoroughly stirred by repeated plowing and harrowing, and leveling, it should be heavily rolled down before the seed is sown. Remember, that once well prepared and properly seeded down, etc., a lawn is easily cared for ever after. Blue Grass or Red-top makes the best lawn. All weeds should be pulled out by hand until the sward is firmly rooted.—*Agriculturist.*

THE GEMS OF SPRING.

There is no season of the year when opening flowers occasion greater delight than in early spring, after we have been deprived for months of all out-door bloomers. To secure them, we must make preparations in autumn, if they are not already provided for.

The early bulbs make the first brilliant display, among which are the Snowdrops, Siberian Squills, the many-colored Crocuses, Hyacinths, early Tulips, etc. Beds of these Bulbs may be set out till November, but they do better if in position by the middle of October. Those which are half tender, like the Hyacinth, must, of course, be covered on the approach of winter; and

they should also have perfect drainage, and be separated from a wet, adhesive soil. It is therefore best, where the soil inclines to be heavy, to place a small handful of coarse clean sand beneath each bulb at the time of setting.

Some of these bulbs are so hardy as to endure and hold their places wherever set. We have seen a striking appearance presented when the flowers of the Crocus gemmed the surface of a smooth grass lawn, the Crocus beds having stood there before the ground was seeded to grass; the blooming was over before the lawn mower was used.

Nothing has a more beautiful appearance in April than masses of the liquid-blue flowers of the Siberian Squills resting on the surface of a green lawn.

Many hardy annuals may be sown in autumn, and will give a more certain and much earlier bloom than from spring sowing. All plants which are seen coming up early in the spring from the accidental dropping of the seed from the plants which have ripened the year before, are suitable for autumn sowing. Among them may be named Candytuft, Rocket Larkspurs, Sweet Alyssum, Mignonette, Portulaca, in light soil, and some of the Centaureas. Perennials, sown early enough to make a good growth before winter, will bloom the following season, such as Digitalis, Hollyhocks, Aquilegias, etc. Mr. Vick says he has received flowers of the Pansy from southern States, nearly four inches in diameter, in winter, which had been sown the previous autumn.

Herbaceous perennials, such as Pæonies, Campanulas, Larkspurs, Columbines, etc., which have stood and increased for many years, may be taken up and divided at the roots, and then reset for larger beds. These will follow the early bulbs, and precede the annuals. The work should be done as soon as the leaves die, and the new plantings be slightly protected.

THE CORK TREE.

Several experiments have been made with the Cork tree in various parts of the State with considerable success. There is a prospect that it will soon be more extensively introduced, Sonntag & Co. of this city having sent an order to Spain for three thousand pounds of seed, which will be distributed gratuitously to farmers throughout the State. This valuable tree grows abundantly in Spain, Portugal, and Italy, in thin, rocky soil, and is very tenacious of life. It is a species of Oak, with a soft and elastic bark. When the tree is fifteen years old the barking is commenced, and may be repeated every eight or ten years afterward, the crops improving both in quality and quantity at each operation. Trees thus barked, it is said, will live 150 years. The cork is removed from the trees in July and August. This is done by making incisions around the tree and longitudinally to the root, when the pieces are easily detached. These are then soaked in water, pressed under heavy weights, dried before the fire, and stacked or packed in bales for transportation. The cork cutters divide the sheets of cork into narrow strips, and after cutting these to a proper length, round them into a cylindrical form with a very sharp thin-bladed knife. Spanish black is made from the parings of cork. Cork manufacturers in the Eastern States and Europe find a large market in California, and the demand is increasing correspondingly with our wine product. It is said that a full-grown tree will yield at each cutting the value of from $5 to $6. In addition to the value of the tree for commercial purposes, it makes

an excellent shade and good timber. The latitude of San Francisco is the same as the southern portion of Spain and Portugal, the climate similar, and the soil of the foot-hills of the Sierra is not unlike the soil in which the tree has been so successfully grown in the Old World. When the tree is once firmly rooted in the ground no more care and attention to it is needed than with the Oak. In Spain large tracts of land are devoted to its culture, and each year a section only is stripped of its bark, which insures an annual crop. The experiment of transplanting the Cork tree to our soil is well worth a trial by the owners of large tracts of unproductive land.

SHIPMENT OF FRUIT TO THE EAST.

There has left Stockton for New York a shipment of fruit in the car constructed on Allegretti's refrigerating patent by the California Fruit Growers' Association. Three cars of this patent have just been built in the workshops of the Central Pacific Railroad Company at Sacramento for the association above named. The principle upon which they are constructed is that of perfect insulation. As described by the inventor, the refrigerator car is really two cars, one built inside the other, both lined with galvanized iron. Ice is placed between the inner and outer cars, which requires replenishing not oftener than every four days. The inside car, which contains the products, is ventilated from the top, and the ventilator acts siphon-like in carrying off the heated air, first condensing it, and then discharging it outside the car by its own weight. Mr. Allegretti states that last year he carried American peaches to England, and delivered them in a sound and perfect condition. Some two months ago a trial shipment was made of California fruit in a car built in New York for Mr. Allegretti, and the success then resulting induced the California Fruit Growers' Association to build three cars on their own account. With this class of cars it will not be necessary to send fruit or other perishable products East by fast passenger train, but they will go as ordinary freight, occupying fifteen days between San Francisco and New York. The cost of transportation will be thus materially lessened. If the new cars ordered by the California Association will answer all the purposes intended, a new era will be opened for the fruit and vegetable growers and sheepmen of the State. If the articles sent by the refrigerator can be delivered in Chicago, Cincinnati, New York, and St. Louis, almost as fresh as when they left California, we shall have all the large Eastern markets at our doors. To the producers of California it will be better than stock in the bonanza mines. They will have a market for early strawberries, early vegetables of all kinds, and spring lamb, all of which command fabulous rates in New York. The fishermen will also be able to use them for their salmon shipments. Instead of depending on the consumption of 700,000 people in California, practically a very considerable portion of the United States will be thrown open. Upon the doctrine contained in the old adage, that what keeps out the heat will keep out the cold, Mr. Allegretti affirms that he can carry food or other articles in his cars for twenty days, with the thermometer on the outside below zero, without freezing them. If this be so, the invention may prove of the utmost advantage to the orange growers of Los Angeles and San Bernardino. The oranges and lemons in these counties are gathered in the months of January, Feb-

ruary, and March, just at the time when the coldest weather is experienced in crossing the continent. The fear has been expressed that the orange growers may not be able to utilize the railroad connection made by the Central and Southern Pacific Railroads in the shipment of their oranges East, because of freezing them in their transcontinental journey; but if Mr. Allegretti's cars answer all he represents, the oranges, lemons, and other semi-tropical fruits may be shipped to the Eastern States with impunity in the coldest weather. The shipment from Stockton consisted of grapes, strawberries, pomegranates, figs, etc. It was made under the direction of W. B. West, of Stockton, manager of the California Fruit Growers' Association.

ALARMING CHERRY TREE DISEASE.

Several Cherry orchards about San José have, within the last two or three years, showed the presence of some disease which has alarmed and puzzled the orchardists not a little. The trees, one by one, in places in the orchard, would commence dying at the top. The topmost limbs would die first, and so on down, until in some cases the entire tree would die. In others, after a few of the main limbs died, the trees would take a new growth from the bottom limbs and show signs of recovery. We have visited several orchards and undertaken to ascertain the cause. None of the orchardists could account for the trouble. There were no signs of insect stings or poison in the diseased parts. Some thought the hot sun had scalded the upper limbs, which were apparently not sufficiently supplied with the circulating sap of the tree. We concluded that the trouble must be somewhere in the root, as we knew that a disease of the root would affect trees in just this way. Cherry, Orange, and some other trees, growing in soil with a heavy, wet, stagnant subsoil, have been known to suffer from rotting of the lower roots, which the trees would first show signs of in the top, just as these Cherry trees do that are affected. But in this case the Cherry trees are growing in high, light, well drained soil.

We had an idea that a bed of gravel might underlie the surface soil a few feet down, and that the roots running into this might become affected by a dry fungoid rot. So, after due consideration, we went into Judge Archer's orchard, and with his man spent half a day with spades hunting for the cause. We first ascertained that the trouble was not in the subsoil, but after a careful search about the crown of the roots and trunk, we found that every tree which showed signs of disease had been gnawed by gophers. A little gnawing about the roots would cause a slight affection at the top of the tree, and trees two-thirds or three-quarters girdled about the roots would be diseased in like proportion. The gophers do not gnaw the roots off, but girdle close about the trunk where the roots branch from it. Several trees which we found dead were entirely girdled. A number of trees showing signs of recovery had been gnawed last year or the year before, and not any this season.

Cherry trees are too valuable to be damaged or lost in this manner. Fair-sized trees will yield in value from $20 to $50 each season to the tree. Now that the cause is positively known and the mystery dispelled, we trust that the proper means will be at once taken to destroy the gophers. A few hundred dollars spent for traps and poison and labor will pay the biggest kind of a per cent. by saving valuable trees from fur-

ther damage and destruction by these annoying pests.

Every grower of Cherry trees knows how damaging to a tree is a large wound of any kind. The removal of a large limb may, by the exuding of gum, cause the death of the tree. The gum exudes badly at the roots where the gophers gnaw away the bark, but the dirt acts as an absorbent and has a curative effect. A Cherry tree may recover from some gnawing, but can not stand much without severe injury. Nothing less than the complete extermination of all gophers in orchards should satisfy.—*Cal. Agriculturist.*

AMONG THE ROSES.

One of the most successful Rose raisers we ever knew was the late Charles J. Wistar, of Germantown. He took half ripe wood of Roses, and Rose wood is half ripe just about the time the flowers are fading—and he would put them in pots of sand—the sand full to the brim, and even rounded. These pots were set on his garden walk—a gravel walk—in the open broiling sun, and well watered every day—we are not sure but they had water several times a day—for the good old man spent most of his old days in his garden, and, if we are not mistaken, they had saucers of water under them besides. At any rate, every cutting always grew; and we can imagine nothing more simple or suited to the wants of "floral babies." And, speaking of Roses, we may add that toward the end of June propagation of Roses, by budding, commences. This is very commonly employed with the Rose; but ornamental shrubs and trees may be increased in the same way. Closely allied species must be chosen to work together.

The Prairie Roses have been found excellent stocks. Other Roses take well on them, and they do not sucker much. It is old, very hardy, and it promises to be a very popular stock for rare Roses.

The Rose bugs are apt to be very annoying at some seasons. The best remedy is to shake them off into a pail of water. The Rose slug is often very injurious to the leaves, completely skeletonizing them. All kinds of rapid remedies have been proposed—whale oil, soap, petroleum, etc.,—but the best thing of all is to set a boy to crush them with finger and thumb. It is astonishing how rapidly they are destroyed by this process. This is true of most of the larger insects. Hand picking or crushing is by far the best remedy.

Peg down Roses where a heavy mass of Roses is desired. The side shoots push more freely for this treatment.

Cut off the flowers of Roses as they fade; the second crop will be much better for the attention. Seeds of all flowering plants should also be taken off; all this assists the duration of the blooming season.

Propagation by layering may be performed any time when strong, vigorous growing shoots can be had. Any plant can be propagated by layers. Many can be readily propagated no other way. Cut a notch on the upper side of the shoot, not below, as all the books recommend, and bend down into and cover with rich soil. In a few weeks they root, and can be removed from their parents. Stakes for plants should be charred at the ends before using, when they will last for years.

Flower beds should be hoed and raked as soon as the ground dries after a rain. Loose surface soil prevents the under stratum drying out. Peg down bedding plants where practicable.

Split twigs make the best pegs. In dry weather do not water flower beds often; but do it thoroughly when done. See that the water does not run off, but into and through the soil.—*Gardener's Monthly.*

ROCKWORK.

The rockwork at Kew is a great point of interest to lovers of alpine and herbaceous plants, many of the most rare and choice in cultivation being here exhibited. *Arnebia echioides* is quite established, and has flowered for the second time this season. *Meconopsis Wallichii* still continues to bloom, and though not of so splendid a blue as was anticipated, is one of the most noteworthy of recent re-introductions. *M. nepalensis* has just flowered for the first time in cultivation, and proves a handsome species. Its flowers are yellow. *Berkheya (Stobœa) purpurea*, a fine South African Thistle, with flowers that have been compared to a single Dahlia, is in fine condition. It was introduced by W. W. Saunders, Esq., and is yet found in few gardens. The flower-heads are four inches in diameter, and of wild plants vary in color from deep violet or purple to pure white; here they are nearly white. It proves a perennial, and having been in the same position nearly three years, may be considered hardy. Near this is a very charming Oxalis, *O. enneaphylla*, a native of the Falkland Islands, newly introduced by the *Challenger* expedition. It is very compact, the leaves are silvery, and the flowers white, of large size, all the stems being slightly reddish. It is peculiar from the leaves having five to thirteen or even twenty leaflets. A figure will shortly probably be published in the *Botanical Magazine*. *Hyacinthus candicans*, from the Cape, is extremely beautiful, and quite hardy. Its flowers are pure white, and of immense size. *Liatris pumila* is a very pretty plant of stately habit, its spikes of lilac flowers are nicely set off with grassy recurving leaves. *Allium pulchellum* is one of the most choice; its flowers and stalks are rosy-lilac. Many hardy terrestrial Orchids are established in different parts of the Rockwork, including a few elsewhere, about twenty species, and in some instances have even greatly increased in strength. A pan of *Sarracenia flava*, fully exposed, has finer pitchers than those grown indoors, and this it will be of interest to mention has never been under glass, or favored with other protection. The plants came to hand in January, and have ever since been in a similar position to the present. *Darlingtonia Californica* is doing well under a bell-glass. Among the more striking herbaceous plants may be mentioned *Eryngium Duricei*, *E. cœruleum*, and *E. giganteum*, *Adenophora latifolia*, *Leuzea salina*, a handsome yellow-flowered Thistle; *Onopordon tauricum*, and *O. Alexandrinum* are purple Thistles of great beauty; *Centaurea atropurpurea* is remarkable for its fine maroon-colored flowers; *Echinops ruthenicus* and *persicus* are worthy of notice; while among hardy aquatics, *Justicia pedunculata* is of great interest, if of minor beauty.

THE MOTH.

This little insect, so destructive in our households, is known to naturalists by the name of *Tinea*, and belongs to the family of the lepidoptera, or scaly-winged insects, of which it is the smallest, the most beautiful, and the most destructive. It is second cousin to the canker worm, the apple worm, and the turpentine moth, but among its aristo-

cratic and honorable relations is the silk worm. The immediate family relatives of the common moth are the bee moth, the carpet moth, the hair moth, the grain moth, and the pack moth. As soon as the egg laid by the mother moth is hatched, straightway the tiny worm proceeding from it begins to feed upon the fabric to which it is fastened, and then spins itself a cocoon, in which it moves freely and unseen, and from which emerges in due time a butterfly. In May or June these winged insects deposit their eggs. Before this time everything they can harm should be placed beyond their reach. Before putting away fur and woolen goods they should be thoroughly beaten to dislodge any eggs that may have been deposited on them, and exposed to the sun and air for hours. It is said that brushing over their retreats with turpentine will dislodge them, that camphor, black pepper, tobacco, shavings of Russia leather, will disgust them, that camphor wood and cedar trunks are free from their visitations, and that corrosive sublimate washings, sulphur fumigations, and the action of heat and steam will destroy them. Prevention is the best cure. If furs and woolens are carefully sealed up in paper cases, or put away in chests and trunks which the moth-fly can not penetrate, they are safe. Fabrics already attacked by them should be beaten and sunned repeatedly, and the ravages will be checked. This little insect loves darkness, and hides its evil doings from the light of day. To keep it from plush furniture, twice a year, on a bright sunny day, take the furniture out of doors, remove the bottoms from the chairs if they can be removed, and give the cushions a good switching, with long, pliable switches, till the dust is removed. Then brush them thoroughly. While the cushions are being sunned, give the frames a coat of varnish. Let the furniture remain in the sun nearly all day.

Editorial Portfolio.

OUR FRONTISPIECE.

Fuchsia (Tinted Venus).—The position which this genus now occupies in gardens of every description, and notably in our mild and genial climate, fully exemplifies the estimation in which it is held, and renders any extended eulogy quite unnecessary. The name is a compliment to the celebrated German botanist Leonard Fuchs, author of "Historia Stirpium," 1542. Fuchsias are divisible into two classes, requiring separate treatment, some being hardy and some tender; but for our slope this distinction is not so necessary to observe as in severer climes. For the high-colored varieties the soil can hardly be too rich, but for the light-colored varieties a moderately manured soil will answer. The multitude of offsprings from seed which are now cultivated, of nearly every conceivable shade of color, render it necessary that all productions of this highly valued and most gracefully pendant flower should be marked with some prominent distinguishing character, or they are little better than worthless; consequently this choice variety — Tinted Venus— which is so large and delicate and beautiful in its colors, is highly prized by all lovers of floriculture. Nothing, in our opinion, can surpass the beauty of well-grown specimens of Fuchsias, and to add to our recommendation of them, we can state that they are of the easiest culture and of the speediest growth from cuttings. They are rather the better for having cool and partially shaded situations.

CENTENNIAL NOTES.

Our lady correspondent has been so much engaged otherwise that she has so far had little time to devote to the Horticultural section of the great Centennial Exhibition at Philadelphia. She has had several partial glimpses at the floral display, but it seems to be so fine and on so grand a scale that she has not yet attempted a systematic description even in the most modified form. In a private note she alludes to a visit to the Horticultural Hall to take a view of the grounds, which she says are beyond description. She says that "Coleus of harmonizing colors are arranged in squares, oblongs, stars, etc., looking like so many handsome velvet rugs spread on a floor of green, only rugs were never made so thick and handsome. The grounds are just perfect; everything is in full growth." This is a good beginning, and we hope to get more of it—in fact, we insist on a speedy resumption and continuation of the subject.

WORK FOR NOVEMBER.

The flower garden has its worst time during November; flowers are then becoming very scarce, and florists have difficulty in procuring sufficient for their customers, though every year this want is becoming less and less, owing to new plants being brought into notice, and a more thorough knowledge being obtained by those in the business, to supply the wants of flower amateurs. Shrubs and trees should now receive a thorough pruning. After the first rain the ground should receive a good top-dressing of manure, and after that a thorough spading. Whatever is to be transplanted should be done at this time.

Dahlias are better out of the ground, and stored away in a dry, cool room.

Greenhouse plants should be watered carefully. Gardeners and others are apt to give too much water during the fall and winter months.

Cinerarias, Cyclamens, and Chinese Primroses should receive the attention of florists, in order to have them in bloom at the beginning of January. The best place for them is close under glass. Cinerarias may have plenty of water, if a warm and sunny exposure can be given. Primroses and Cyclamens do better in a partially shaded position.

Camellias require abundance of water as their flowering season approaches.

All kinds of seeds of greenhouse plants and evergreens may be sown in boxes and pots as soon as they ripen. It is much better for seeds to be put in the ground than to lie upon the shelves, especially as without resorting to artificial heat, the autumn and winter months with us are generally more favorable for the germination of seeds under glass.

Hyacinths can safely be planted for greenhouse and window culture. After potting, place them in a dark room for a week or two, and allow them to form roots before the leaves make their appearance.

The vines in graperies must be kept very dry and airy.

WOODWARD'S GARDENS.

This ever favorite and always improving place of public resort has recently received many new touches of beauty and ornament, with additions and renewal in all its interesting departments. The wonderful marine and fresh-water objects of icthyological life in the well-kept aquarium always draw toward the

cool precincts and cavernous recesses the curious visitor. The tanks are well supplied with its ocean, lake, and river inhabitants, which are kept in good health and beautiful complexion, experience having taught the manager what is best to keep them in a lively and prosperous condition. All the objects illustrating Natural History, in the various cabinets, in the choice and rare trees, shrubs, and flowers in the garden, the fernery, and in the conservatories, as well as in this excellent aquarium, tend to inform and educate the people, and the enterprising proprietor of these Gardens is accomplishing very much, and has done so for years, in this respect. To appreciate either Nature or Art, the mind requires a special education, without which the eye and ear perceive but little of the miracles passing before them. When, however, the language of Nature is learned, and her voice is no longer a confused murmur to the ear, but becomes a brilliant series of eloquent words, full of deep and exquisite meaning, then the student will see as well as hear; but till then, in his intercourse with Nature, he is both deaf and blind. "Speak," said Socrates to a youth; "say something, that I may *see* you." Socrates could not see a silent man; and those who do not hear and understand Nature's language, can not see her wondrous beauty. In speaking of this choice aquarium, especially, in these variously and richly furnished Gardens, we will observe in concluding our remarks, that a popular knowledge of that branch of natural history which especially concerns the denizens of our seas, rivers, and the objects on their shores, is indeed of a very recent date. The subject, in fact, is but only lately beginning to develop itself in the aquariums now found in many parts of the world, and beneath the pens of an enterprising band of marine and freshwater naturalists such as Harvey, Johnston, and the indefatigable Gosse, whose books, we are glad to see, are becoming a good deal appreciated by the public in both Europe and the United States.

CALIFORNIA FLORA.

Dr. Kellogg, Curator of Botany of the Academy of Sciences, read a paper before that Association descriptive of a number of interesting specimens of plants found in this State. Among the more important, he noticed a species of Phacelia, discovered by Samuel Brannan, Jr., in 1871, on the summit of Granite Mountain, Kern County. It has a purple-blue flower, and is very ornamental. As it is a new plant it is proposed to name it *Phacelia Brannani.*

A new species of wild Pea, *Lathyrus macrocarinatus*, found by Mr. Hutchings in Southern California, was described. Also, a species of Pea, found by Mr. McClean, a student of the University, on Mount Tamalpias. It has a dense habit, and is a singular plant, but may possibly be a foreign one.

A very beautiful Lupine (*Lupinus sericatus*) has been received from Miss Anderson. Its flower is a purple-blue, and it will be highly prized for ornamental purposes. It was found in Lake County. The fruit is desired for cultivation, and specimens will be thankfully received by the Academy.

A specimen of *psoralea*, from Dr. Bahr, was noted. Also another species of Phacelia, recently found among a collection gathered many years ago by Dr. Andrews. It proves to be a new plant.

Mr. Henry Edwards, Vice-President of the Academy, recently discoverd a

European species of Daisy, naturalized at the foot of Tamalpais. It was remote from any habitation, and it is curious to speculate how the species propagated itself to another continent. There is a slight variation, but not enough to make a new species. The plant has been described for the archives of the Academy.

Dr. Kellogg recently found at Guadalupe mine, eight miles south-east of San José, in Santa Clara County, a distinct species of *Nemophila*, a popular plant for gardens, on account of its free flowering habit and brilliant colors. He also found the *Calindrinia*, a species of Parsley, not much used in this country, but prized by the French for greens. It is sometimes termed the "pink-eyed beauty."

A species of Sunflower, probably the *Helianthus Californicus*, has been found in Owen's Valley, and travelers in that region will confer a favor by collecting and preserving specimens for the Academy, as it is desired to make a more extensive examination than has hitherto been practicable. The farmers say that this species has appeared since their arrival in the valley, but it is possible they did not observe it growing wild. It grows along irrigated borders and cultivated fields. It is remarkable for its great height, and the exuberance of its flowers. It bears from three to five hundred, and would be very ornamental for parks, where conspicuous objects are desirable. Its stem is white and smooth.

Tamalpais also furnishes another species of the Musk plant. It has a beautiful, dewy, crystalline appearance; its flowers are large, but no musk odor at all has been discovered, after careful observation.

Some person has sent to the Academy, without explanation, a very interesting variety of the Violet, differing from the common plant of the redwoods.

IRON AND WIRE WORKS AND ORNAMENTATIONS.

Of late years, and remarkably so in our young city, San Francisco, useful, graceful, and beautiful articles manufactured in wire have become quite prevalent, and been much adopted in our houses and gardens. The display of the handsome works in the Fair fully proves and illustrates these remarks. The exhibit at the entrance of the Pavilion garden, by Howard & Morse, of fancy iron wire fencing, summer houses, bird cages, etc., either galvanized or painted, and also the summer house in the centre of the garden, made a very attractive and effective display. The fancy iron wire fencing is being much adopted on the grounds of wealthy people in the East, and large orders have been sent to this firm from there, and it is fully expected that our well-to-do men and millionaires here will extensively patronize it round their squares in the city and their villas in the country. For garden seats and arbors where rustic wood work would be appropriate, those of metal work will be found of the greatest value. The above firm produce, as their exhibit shows, fine examples of artistic iron and wire work, chairs in Gothic, vine-leaf and oak and other patterns, at moderate prices and of incomparable beauty. The obdurate nature of the several metals used is entirely overcome in the elegant traceries, waving lines and light flowing scrolls which adorn these admirable pieces of furniture.

Perhaps the most useful of all their metal adornments for gardens are the arches and canopies of wire work for

spanning paths, or as affording proper supports for the growth of elegant climbers. There can be nothing cheaper or more durable, while the elegance of these ornaments, when covered with fine climbing masses (such as our California climate can produce), of *Stauntonia*, or the verdurous tendrils of *Astrolobium nithon*, or even common Ivy, with many other like things, is unmatched. The canopies are suitable for plants of less rapid growth, and are in themselves elegant structures, though of course still more so when skillfully covered with the tendrils and blossoms of suitable plants. We strongly commend these structures to all lovers of the useful and graceful in gardening. Trellises fitted to pots and covered with climbers make noble window and terrace ornaments. The choice kinds of *Tropœolum* or Nasturtium are among some of the best plants for the purpose. To carry them over the entire surface it is necessary to watch the young shoots as they make progress, and lead them regularly. Fine lead wire will be found useful in all cases where creepers have to be led over trellises. The thread-like tendrils of the *Tropœolum* make the best effect if trained over the interior of a sphere; but for plants of stouter growth, such as the pyramidal Bell-flower, a flat and somewhat fan-shaped design will be most suitable. Trellises and wire work designs of light character suit for such climbers as *Passiflora rhodochiton*, *Cobœa scandens*, *Maurandyas*, and Fuchsias of pendant habit.

Where it is possible to make an ornament useful, or at least to appear useful, it is always much more appropriate. Thus, the summer house or arbor offers shade and a place of rest, and hence should be placed in a spot where rest will be most agreeable; where there is a good view is often appropriately chosen as the site for an invitation to halt and rest. Rustic arbors may be shaded with fruit-trees, vines, Currant, Cherry, and any other bowery fruit-trees and shrubs. Ivy, Clematis, Everlasting Pea, Yellow and White Jasmine, Stauntonia, Virginian Creeper, etc., are also useful and make elegant screens.

Folding chairs are sometimes made for gardens, so arranged that the back folds down on the seat and keeps it always dry; the visitor has to throw up the back, when the seat is found dry and well protected from the effects of the sun. This may be a hint for manufacturers. We hope to see these wire and iron works, so promotive of refined taste in the public mind, well patronized and adopted generally.

Mr. J. P. Bering, of 420 Sansome Street, is agent for Messrs. Howard & Morse, and his exhibit of wire goods at the Pavilion was very fine, and comprised almost everything in that line that could be called for, and was worthy a close examination. Little more need be said in regard to it, except that for most uses in the garden where wire can be adopted it is cheaper than wood; and that this firm also manufacture brass, copper, and iron wire-cloth, riddles, coal and sand screens, iron and steel locomotive spark wire-cloth, etc. This cloth is well adapted to the purpose of drying all kinds of fruit, etc., and therefore the attention of all fruit raisers is hereby directed to it.

THE MECHANICS' FAIR GARDEN.

The following remarks on the Pavilion Garden, which should have appeared in our No. for September, is produced in this issue, being a graphic and exhaustive description of that beautiful adjunct to our industrial exhibition:

"As might have been expected by all experienced horticulturists, for such is the natural progress in this as in most other arts, practice and experience always leading toward perfection, the horticultural department and grounds of the exhibition have been much improved in their preparation and arrangement over those of last year. The space is not large enough for any great display of taste and laying out in what is termed the English natural landscape style of gardening, the more formal or geometric fashion being adopted here. Neither was there room for any striking or imposing formation of rock-work, and taste has not been violated by the introduction of bowlder or stone pyramids, plaster busts or figures, conch shells, etc., under the general denomination of rock-work. But properly treated, as the rockery is round the Magic Fountain, in front of the rustic arbor, and also on each side of the arbor with the suitable plants intermingled, it is a fine ornament, and to the botanical student is something more—it is a *nidus* for botanical curiosities, for choice things that either will not grow elsewhere, or, if they grow, are not seen to advantage in such positions as the rockery affords for placing them. The Ferns exhibited by R. B. Woodward and Miller & Sievers, near the entrance, are exceedingly attractive, comprising the choicest old as well as best new specimens in that most interesting department of horticulture. The Fernery belongs to the truly rustic rather than the rural part of gardening. Though Ferns are beautiful anywhere, and may suitably adorn the trim border, and mingle with the ornaments of formal design, they are more at home, more befitting among tree stumps, and in boldly designed rock-work or water scenery, where they appear in their proper character of wildness and simplicity. Ferns suggest and create in us associations with the greenest and coolest nooks in nature, mossy and old banks above water brooks that trickle from unseen founts, in the deep recesses of wild, rocky caverns, and under the branching arms of twisted grey-beard Oaks and ancestral Elms, breathings of fragrance from the green world that sweeten the resting places in the march of life. These two displays of Ferns are of rare beauty, and form one of the great features of the Fair. The giant or tree and dwarf Ferns are especially charming, and remind us of what must be their delightful and rich luxuriance in the tropical regions. The collections of variegated leaves and tropical plants, by Miller & Sievers and Woodward, are choice, various, and some of them quite rare. The former have a neat and pretty stand of a variety of the Cacti, with some in bloom. There are two tables of very good specimens of Grapes, Apples, Pears, Plums, Oranges, etc., showing what the climate of California can do, both as to large size and splendid coloring, and such samples can not be otherwise than generally good in quality. They are from John Crofton's orchards on the Sacramento River; William Barry's ranch (fine German Prunes), on the same river; Solomon Runyon, the same; Chas. A. Baur, Eldorado orchard; D. R. Hayes (very large Oranges), from Santa Barbara; and Jesse Cheney (immensely large and fine Bartlett Pears and Peaches), from Santa Clara. Miller & Sievers have a table of cut flowers of Dahlias, Roses, Verbenas, Gladiolus, etc. Such displays as these are of flowers, ferns, exotics, coleus, etc., and fruits, although unfortunately from some cause or other (and we fear far from a praiseworthy

one), from but few exhibitors, can not be overvalued by the public, and have a strong tendency to develop the æsthetic principles in them, especially as to the flowers, trees, and shrubs, also a taste for the useful as well as the beautiful in the productions of Pomona. The handsome trellises, summer-houses, and wire work designs at the entrance of the garden, from the California wire works, make a most ornamental display there on the upper terrace, and the iron wire work of Howard & Morse, in the centre of the garden, produce a very good effect."

FRUITS AND INSECTS.

O, the fruits, the fruits of California! We can not refrain from speaking of them again, and again, even at the risk of being considered as exaggerating the quantity, quality, and importance. As to the first, especially this year, these valuable and delicious productions of Pomona are simply enormous here. The plentiful rains last winter and spring, the freedom from frost generally, and the genial weather for their maturing have made them large, if not gigantic, (though their size is always greater on this slope than eastward of it), and their color, richness, and juiciness, with excellent flavor and qualities, were never better, if so fine as this year. It would take up too much space to describe this orchard wealth separately, but we can not resist describing a few of these riches. Comparatively, they seldom have in the Eastern States a successful season for Apricots and Nectarines, or even soft-shelled Almonds; but here we never fail in some, and many localities, although the frosts will occasionally nip them or rather their blossoms, in a few places on this coast. These are the earliest fruits of the year, and therefore most liable to destruction, more or less, by late frosts. The quality and variety of kinds in these early fruits in this State are splendid, and until there are more markets both here and in the East for these Apricots and Nectarines, as well as later fruits, and the refrigerator cars are still more improved than they are at present, and drying and canning become still more advanced in their processes, there must necessarily be low prices, and not only this, vast quantities of these fruits will be wasted or only fed to stock, and the middlemen or consignees, rather than almost give them away here, will, as they sometimes do, actually dump them into the bay, or cast them into the gutters, which latter proceeding, by the by, would be the best, for the poor would then be apt to pick up some for themselves and families.

Our Plums, so difficult to raise in the Eastern States, owing to the unfailing and unceasing attacks of the curculio, have presented this year one of the most brilliant and attractive sights in the fruit line that can possibly be conceived. Every variety of the Plum does splendidly in this region, and we have numerous sorts under cultivation. We were examining a box of Coe's Golden Drop the other day, and for size and richness of deep yellow with their reddish mottled skins we hardly ever beheld anything of the kind so truly beautiful. And so with all the other numerous varieties of this useful, wholesome, and delicious fruit when perfectly ripened. We find those raised on uplands are more juicy (a most desirable quality), than those cultivated on the lower lands, and this holds good with nearly all our fruits in this portion of the Union. A short time since, when we were sojourning in Mendocino County, on a trout-fishing ex-

cursion for two weeks, about 100 miles north of this city, we visited one of the orchards there—the trees were breaking down with their loads of fruit—and we were surprised to find some clear gum exuding from the skin of several Yellow Egg Plums, showing that they had been stung by some species of the curculio, and, no doubt, an egg layed there. Several of the insect pests of the East are beginning to make their appearance with us, and we have but little doubt, from these late symptoms in several parts of the State, that in time we shall be nearly as badly off for these enemies of tree, shrub, flower, fruit, etc., as any other country, although it is probable that the extreme dryness of our summers may operate somewhat against the perfect flourishing of all the insect tribes. We regret, also, to observe in some other fruits, more especially the Pears, symptoms of the attacks of worms, a fact which is quite uncommon here, and which we have not noticed until the present season. It has been the boast of California that whatever might be said about the coarseness and lack of flavor in her fruit, it was entirely without blemish of any kind, and free from the attacks of insects. If we are to be subjected to the same annoyance and damage that are experienced in Eastern orchards and vineyards, from the ravages of insects, it behooves our horticulturists to take the most vigorous measures for the protection of their fine fruits before the attacks of insects, and all the ills that they are heir to, shall have so diseased the trees and vines, that perfect fruit becomes the exception, rather than the rule. But we fear it will be very difficult to check this insect advance, as the little creatures can be eradicated only by the greatest labor, care, and watchfulness.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

The general natural soil of California being so good, most cultivators are not liable to fall into the error of stimulating too much the growth of their fruit-trees by over-enrichment of the soil with great quantities of manure. This process is especially objectionable to very young trees. We have no doubt that the time will come—indeed, in some countries it has already arrived—when manures will be so thoroughly analyzed and classified, that they can be and are employed just as a carpenter does his tools, or the farmer his implements. If we wish wood, we shall apply certain ingredients to the soil and have it; if we wish fruit, we shall have at hand manures which promote the fruiting properties of the tree; if we want seed, we shall have manures for it. But manures as now employed are usually not beneficial to orchards of young trees. A clay or adobe soil, very stiff and adhesive, may require sand and vegetable mold to render it permeable to the root, besides, of course, much working or disintegrating. Some very barren soils may require some manure; but the average of our soils on this slope are rich enough already, and almost too rich for the good of the young trees. It would be better for the orchard if it made less wood and made it better. There is a great evil in pruning too much. France and England have often given us our notions upon pruning. There, their own system, no doubt, is wise, because it conforms to their climate and soil. But their system of pruning is almost totally uncongenial with our seasons and the habits of our trees. In England, for instance, the Peach will not ripen in open ground, except, perhaps,

in the extreme southern counties. In consequence, it is trained upon walls, and its wood thinned, to let light and heat upon every part of it. It is quite right to husband light and heat when it is scarce, and by opening the head of a tree to carry them to all parts of the sluggish wood. But we have often more than we want. A Peach with us will ripen upon the lowest limb and inside of the tree, by the mere heat of the atmosphere. Even in New England's cool and short summer climate the English system of pruning proves too free. Manning says: "From the strong growth of fruit-trees in our country, and the dryness of its atmosphere, severe pruning is less necessary here than in England." We are not now giving rules for pruning, having at times done this before in the HORTICULTURIST—but cautions against pruning too freely. There is not a single point in fruit cultivation, we think, where more mistakes are committed than in pruning.

With regard to the selection of trees from the nursery, they are often chosen upon a bad principle. Men are very naturally in a hurry to see their orchards in bearing; precocious trees, therefore, and all means of prematurity are sought.

With respect to the Pear, it is the popular but incorrect opinion that it takes half a man's lifetime to bring them into plentiful fruiting. This, it is true, is a good deal the case in the Eastern States, but it is very much less so in California, for the rapidity of growth and fruiting of all trees is remarkable and wonderful. However, the principle we are advocating applies somewhat even in this State. Many farmers judge of a tree as they would Timothy grass. A short-jointed, compact branch is "stunted;" but a long, plump limb, like a water shoot, or a Lombardy Poplar branch, is admired as a first-rate growth. Some Pears have but this single virtue: they make wood in capital quantities, but very poor Pears. Now, our selection must proceed on different principles if our orchards are to be *durable* and *healthy*. We should mark for selection Pears described by the nurserymen as "of a compact habit, growth slow and healthy, ripens its wood early and thoroughly." A tree which runs far into the fall, and makes quantities of wood, more than it can thoroughly ripen, must be regarded as unsafe and undesirable. Not that the wood is in danger in this fine climate of being hurt by any frost, but because the nature of the growth of such trees is the formation of too much wood instead of fruit.

It is too much the practice with nurserymen to force their trees by cultivation and by pruning. It is very well known, to those conversant in the nursery business, that great growers and early growers are the favorites (and, so far as an expeditious preparation of stock for sale is concerned, justly), that slow and tedious growers are put upon rampant growing stocks to quicken them. In some cases manures are applied to the soil, as directed by all writers who teach how to prepare soil for a nursery. But such writers had their eye upon such a climate and soil as those of New England, and not of California. The still more vicious habit of side trimming and free pruning is followed, which forces the tree to produce a great deal of wood, rather than to ripen well a little. A well-informed nurseryman ought not to look so much at the length of his trees as to the quality of their wood. The very beau ideal of a fruit-tree for our climate is one that, while it is hardy enough to grow

steadily in cool seasons, is not excitable enough to grow too rampantly in warm ones, and which completes its growth early in the season, and ripens its wood thoroughly. Such trees may be easily had by skillful breeding.

At the beginning of this month (October) the fruit market was still supplied with Grapes and Apples in the greatest abundance. Choice eating Pears, however, were scarce, for the reason that the Seckel and Bartlett had about disappeared, and that high and excellent flavored Pear the Winter Nelis was still unripe. The best Pear in market at that time was the Duchess d'Angouleme. Cooking Pears and common Apples could be obtained at almost any price—say, 50c. to 75c. by the single box. Good Apples sold at $1 to $1.50, and good Pears at $1.50 to $2 by the single box, delivered. The principal varieties of Grapes retailed as follows: Sweetwater, Chasselas and Mission, 4c. to 6c.; Black Hamburg, Rose of Peru, and Black Malvoisie, 6c.; Muscat of Alexandria, 5c. to 8c.; Flaming and White Tokay, 6c. to 8c.; Black Morocco, 10c. to 12½c.; Purple Damascus and Olivita, 12½c. per lb.

The market may be said at the time of issuing our paper to be replete with all kinds of stock belonging to the season, and prices of some kind, however low, were offered and generally received by the sellers. We observed on some of the stalls the Prickly Pear in small numbers. Strawberries are coming in in goodly numbers, with prices suitable to the season, and which, of course, must be higher than the spring and summer fruit.

The prices of vegetables are: Cabbages, 50c. per ctl.; Cucumbers, 37½c. to 60c. per box; Tomatoes, 25c. to 50c. per box; Green Corn, 10c. to 18c. per doz.; Marrowfat Squash, $8 to $10 per ton; Green Peas, 2½c. to 3c. per lb.; Sweet Peas, 2½c. to 3c. per lb.; String Beans, 1½c. to 2½c. per lb.; Chile Peppers, 50c. to 75c. per box; Garlic, 2c. to 2½c. per lb.; Okra, 6c. to 7c.; Egg Plant, $1.25 per box. A few days since Bananas were being sold in the streets by the wagon load at 25c. per dozen.

CATALOGUES RECEIVED.

We find in our advertising pages this month a handsomely got up, extensive general and descriptive catalogue, from the Exotic Gardens and Conservatories of Miller, Sievers & Co., of new and rare plants, trees and shrubs, seeds and bulbs. The nursery and seed store of this well known firm is located on Mission Street, between Thirteenth and Fourteenth Streets, opposite Woodward's Gardens, in this city.

We have received also "The Centennial Descriptive Catalogue for 1876–7 of Tulips, Hyacinths, Crocuses, Lilies, and other Spring-flowering Bulbs, etc.," from F. K. Phœnix, Bloomington, Ill. Also, his wholesale price list for the above years.

From I. H. Simpson, Vincennes, Knox County, Indiana, proprietor of the Knox Nurseries: "Wholesale Price List of General Nursery Stock, Greenhouse Plants, etc., for the Fall of 1876 and 1877."

From E. Moody & Sons, Lockport, N. Y.: "Semi-annual Wholesale Trade List of the Niagara Nurseries for the Fall of 1876 and Spring of 1877."

From A. Bryant, Jr., Princeton, Ill.: "Wholesale Price List of Nurseries for the Fall of 1876 (for Dealers and Nurserymen only)."

Price List of the Illinois Pottery Co., I. Kuhles, President, Chicago, Ill.

From R. S. Johnston, Stockley, Del.:

"Wholesale Price List of Nursery Plants at the Sussex Nurseries, Fall, 1876, and Spring, 1877."

EARLY YORK CABBAGE.—Last March I planted Early York Cabbage, and in June had heads ready for eating. After cutting off the heads fresh sprouts started from the roots. I trimmed them all off except one, and now (October 1) have a second crop, specimens of which I send you. They are beautiful for salad.—A. HONCHARENKO, *Ukraina, Cal.*

THE GINGER PLANT.—How delightful it is to observe business men take pleasure personally in floriculture. This taste we had the gratification of seeing in the garden and conservatories of W. F. Babcock, Esq., among the pleasant residences on Rincon Hill. Here we saw in Mr. B.'s greenhouse some very fine plants of the Ginger (*Zingiber officinale*), of the family *Scitaminæ*. The root is a rhizome, similar to that of the *flag;* it is perennial, but the leaves are annual. Some of the plants were eight feet high, nearly touching the roof of the house. The mode of growth of this curious flower is very peculiar, and also the horizontal growth of the base, from which spring the main vertical stems. The color of the flowers is a very pale yellow. Some species are of a deep yellow, and others tinted with red. But perhaps the most valuable quality of these wonderfully vegetating plants and flowers is the delicious aroma of the latter, which is somewhat similar to the rich scent of the white Cape Jasmine, and which completely fills the conservatory. One truss of its flowers will perfume a whole suite of apartments. Mr. B. has a large variety of fine plants in his garden and conservatories, and has lately added a new garden to his rather extensive premises, which look already very well as to turf and flowering plants, though only commenced last July.

THE POLYANTHUS NARCISSUS.—The general experience with this beautiful spring flower is that the bulbs should be lifted as soon as the leaves turn yellow, and kept in a dry cool place until October, for if they are suffered to remain in the ground all summer, they are apt to start into growth again in the autumn, which injures them for spring blooming.

NEW MUSIC RECEIVED.

From F. W. Helmick, Cincinnati, Ohio.

"What did he say to you?" Ballad. By Jeannie I. Tanner. A beautiful ballad, the music of which is simple and easily played, on either piano or parlor organ.

"Angels hover o'er our Darling." Words by Arthur L. Fanshaw. Music by Geo. Hastings.

METEOROLOGICAL RECORD,

FOR THE MONTH ENDING SEPTEMBER 30, 1876.

(Prepared for THE HORTICULTURIST by THOS. TENNENT, Mathematical Instrument and Chronometer-maker, No. 18 Market Street.)

BAROMETER.

Mean height at 9 A. M.		30.05 in.
do	12 M.	30.05
do	3 P. M.	30.04
do	6 P. M.	30.03
Highest point on the 21st at 3 P. M.		30.14
Lowest point on the 27th at 6 P. M.		29.92

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.		63°
do	12 M.	69°
do	3 P. M.	68°
do	6 P. M.	62°
Highest point on the 25th at 12 M.		86°
Lowest point on the 2d and 20th at 6 P. M.		58°

SELF-REGISTERING THERMOMETER.

Mean height during the night	50°
Highest point at sunrise on the 25th	54°
Lowest point at sunrise on the 10th	45°

WINDS.

South-east and south-west on 18 days; west on 12 days; south-east on 2 days.

WEATHER.

Clear all day 14 days; cloudy all day 5 days; variable on 11 days; rain on 3 days.

RAIN GAUGE.	Inch.
4th	0.12
29th	0.12
30th	0.02
Total	0.26
Previously reported	0.03
Total up to date	0.29

GLADIOLUS.

Engraved and Printed in Colors by Geo. Frauenberger, Rochester N.Y.

For description see page 14.

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. VI. SAN FRANCISCO, NOVEMBER, 1876. No. 11.

CHINESE CHRYSANTHEMUM.

BY E. J. HOOPER.

The varieties of this attractive flower are well known, but not as much appreciated as they should be. This is surprising, when it is considered that they are not only easy of cultivation, but that they form a great addition to the beauties of the flower garden in the latest months in autumn, when there is somewhat of a scarcity of flowers, even in our florally favored California.

The culture of the Chrysanthemum, even at the present time, strongly resembles what a late writer tells us of the practice of the Chinese; as it is found that it is apt to degenerate if not frequently renewed from cuttings, or transplanted. The soil most suitable for them is a light rich loam and decayed manure, in the proportion of two parts of the former to one of the latter. The cuttings should be made in the winter or spring in this climate, and they will flower the same year. They may be either grown in pots through the summer, or planted in the ground, and taken up and potted in September or October. When grown in pots they will require to be shifted two or three times during their growth, and by the end of August they should be finally shifted into the pots in which they are to flower. They require, at all times during their growths, a good supply of water; and in our dry summers, when the foliage droops, they are much benefited by being sprinkled all over with water, sometimes as often as three times a day.

In August, those in pots should be watered with soap suds or manure-water once a week, and this should be continued until they come in flower, which will be about the commencement of our rainy season. If planted in the ground they should have an open situation, and be allowed sufficient room, so as not to interfere with each other while growing, and be tied up to sticks as they advance. They need not be taken up from the open ground at any time in our mild climate, as we have hardly ever enough frost to injure them much. But in removing them they should have balls of earth at their roots, and placed in proper sized pots, if that should be desired for any purpose. When in flower give them plenty of water; and when they have done flowering they may be trimmed a little, if too straggling in their branches. Then our

rainy season will keep them in good health and condition, until they require water during our long drought in summer and part of the fall.

WATERING.

BY A GARDENER.

Injudicious watering does more injury to plants in rooms and conservatories than most persons imagine, as plants suffer from too much water as well as too little. Many persons think that they need water every day, and almost the more they give the better. Others, being very cautious, will scarcely give them sufficient to sustain life. When plants have had too much water, the leaves turn dark and flabby, and when too late they turn yellow, and finally drop off. The best plan is not to water them till the soil in the pots appears dry, or their leaves droop, then give them sufficient water to wet the soil thoroughly down to the bottom of the pot, and do not give them any more till they become dry again. Pour the water on the top of the pot, and let it soak down to the roots, but do not let it stand in the pans under the pots, for it causes the roots to decay, and injures them very much. Of course, this does not apply in the case of aquatic plants, and such as require a more plentiful supply in the time of flowering. The water for this purpose should not be taken fresh from the pump, or pipes, or cistern, in the winter season, or indeed at any time in this city from the Water Company's supply, but should stand in the room a little while, or be a little warmed to take off the chill. When the weather is warm and dry, as it is in our California summer, and the plants in full flower, they will require watering pretty freely every day, especially such as are in small pots, and the pots perhaps full of roots. Those in larger pots, with more room for their roots, will not require it so often. The best time to water plants in summer is in the evening, as they will have the night to refresh themselves in; and in the winter season in the morning, that the pots may be warmed in the sun, if possible, and they will not then be subject to be chilled; although in a room warmed so that a regular heat is kept up, it will make but little difference—they may be watered when most convenient. As some plants evaporate their moisture much sooner than others, they will require watering more frequently, which will be indicated by the drooping of their leaves. In cloudy or rainy weather they will not need so much water, unless they are in the house, or the soil is dry. Plants accustomed to the house should not be set out in heavy rains in winter, or early in spring, as the rains are sometimes cold, and if they become saturated it gives them a chill from which they are some time in recovering; but in a warm rain they may be set out for an hour or two, and then taken in again, which will greatly refresh them, and persons having only the house to keep them in, will find them much benefited in warm weather by setting them out in the evening to receive dew, and taking them into the house again in the morning. Plants in warm rooms at all times require to be kept a little moist, though they need most water when growing (which is nearly always in our climate) and flowering.

THE CACTUS.

All the species of this tribe are destitute of true leaves, except when they are first beginning to grow. Just at that time they do indeed produce little

succulent bodies, which we know to be rudiments of leaves; but such parts drop off soon after they are born, and the only representatives they leave behind are the stiff hooked spines, with which so many species are covered. The parts which are mistaken for leaves in the Indian Fig, or some of the more common species of Cereus, are only the flattened joints of the stem.

It would be difficult to find any race of plants, where more obvious connection exists between the manner in which they are constructed, and the situations it is their destiny to live in. The greatest number grow in hot, dry, rocky places, where they are exposed for many months in the year to the fiercest beams of a tropical or semi-tropical sun, without a possibility of obtaining from the parched and hardened soil more than the most scanty supply of necessary food. Under such circumstances, plants of an ordinary structure would perish; but Cactuses have a special power of resisting heat and drought, and, like the camel, they carry with them a supply of water for many, not days, but months. It usually happens that once a year, during several weeks at least, the air that surrounds them is saturated with rain or moisture, and the soil they live in is drenched with almost ceaseless rains. At this time they grow fast, all the little cavities in their tissue, of which there are countless millions, are filled with liquid nourishment, and they may be literally said to gorge themselves with food. Then, when the rains cease, and the air dries up, and the spirit of the desert reassumes his withering dominion over this climate, Cactuses are in their most robust health, and their cells are abundantly filled with provision against scarcity. But these supplies would be quickly consumed by plants only protected by a thin epidermis, and having their surface pierced by millions of breathing pores, all actively inhaling the evaporable matter that lies beneath them, and an early death would be the inevitable result. Such, indeed, is the lot of all the gay companions of the Cactus, which surround it during the season of feasting and prosperity, and to which Nature has given no special means of enduring the hardships to which their lot exposes them. A few days or weeks suffice to sweep their forms from the face of creation; their leaves rapidly consume the stores deposited in the stems; their stems turn in vain to the roots for a renewed supply, for after but a little while the arid earth has nothing to part with, and then the leaves wither and fall off, the stems shrink up and crack with the dry heat, and the roots themselves, in many cases, follow the same fate. With Cactuses this is different; they have so tough and thick a hide, that what liquid substances they contain, can only pass through it in minute quantities. The breathing pores of their surface are comparatively few, and so small as to act with extreme slowness when the air is dry; so that in proportion to the aridity of the air, and the heat to which such plants are exposed, is their reluctance to part with the food they contain. They digest and redigest it with extreme slowness, and may be truly said to live upon themselves during all those months when they can not feed upon the soil or the atmosphere. Some of their flowers are wonderfully curious and beautiful, of the most brilliant colors of crimson and gold, pink and gold, and other lovely shades. About May in this clime they make a grand and gorgeous display, and many of them will do well all the year out of doors in this mild cli-

mate. We have seen the flowers of them as large as the crown of an ordinary hat. Most of our nurserymen have a fine assortment of these succulents and Cacti.

THE VIOLET (VIOLA), AND ITS CULTIVATION.

The origin of the word Viola is somewhat in obscurity it seems. But whatever be the derivation of its name, no plants have been more celebrated in song and story than those of this beautiful genus.

"Violets dim,
But sweeter than the lids of Juno's eyes,
Or Cytherea's breath,"

have always been the poet's flowers, and certainly their delicacy, beauty, and perfume, render them worthy of all that has been written and sung in their praise. At this time in our city they are becoming abundant, and they last here a long time. In no city can they be produced in greater abundance, or be more moderate in price.

The Sweet Violet (*V. odorata*) of several varieties, and the Pansy or Heartsease (*V. tricolor*), with its endless varieties, have a place in every flower garden, from the conservatory of the prince and millionaire to the little patch of the more humble citizen. The Sweet Violet, which is doubtless the species described by the ancients, is very widely diffused over the Eastern or Asiatic Continent, being found in the British Islands, all over Europe, and extending even through Asia to China and Japan, and to a great degree indigenous to America. The most highly prized varieties are the Russian and the Neapolitan. The latter are pale blue, and very fragrant, and flower during the whole winter—either in the greenhouse or out of doors, as the climate may be. The Russian has a large flower and leaf. The other species, or Pansy, may be noticed here at the same time, and from its being so great a favorite with all florists and amateurs, receives the very great attention it so justly deserves, from its variety in colors and loveliness, and is now made by careful selection of imported seeds, and good culture, and frequent renewal and replanting, to produce very large and exquisitely handsome flowers.

Should the expense of replanting the Pansy be objected to, the plants may be raised from seed in some box, which should be placed in a warm and sheltered situation, and covered during cold nights until the seeds are up. This is especially advisable in San Francisco, where for weeks during the year the warmth of the sun is insufficient to stimulate the seeds, in which case they decay. Seedsmen are often blamed for furnishing bad seed, when they are entirely innocent, as the best seed will fail by lying too long in the ground. The young seedlings when planted out will soon make a good advance without farther trouble. Seed sown in September will flower in spring; that sown in February, during the summer; and that in May, during the fall of the year. Any very choice or pleasing variety of Pansy may be preserved by sub-dividing the old roots after flowering three or four months; these sub-divisions will root freely, and form vigorous young plants, retaining the original tints of the parent stock. The Pansy freely propagates itself when once introduced into a suitable garden and location, but the flowers of plants so acquired will be inferior to those raised as recommended. We see very few gardens now without this lovely flower.

The common Violet is found wild in many parts of the world, and the Pansy

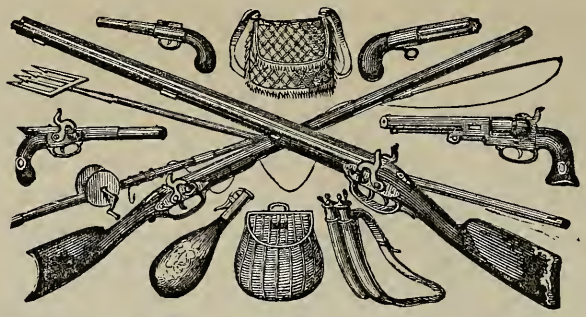
is found to be a native of California. In New England they have at least 12 well distinguished species, several of which are worthy of mention. One, particularly distinct from all others, is the Pedate Violet (*V. pedata*). Contrary to the usual habit of the genus, it grows in dry, sandy soil. Its flowers are large, and its root-stalk is very curious, appearing as if the lower part were bitten off, and furnishing an excellent example of the premorse root. The leaves are perfectly pedate, having from five to nine lobes. Another large and showy species, with yellow flowers, is *V. pubescens;* and *V. Canadensis*, a tall Violet, with white or light blue petals with yellow bases, is considered one of the most beautiful of the whole genus. In Ohio and Kentucky, to our own knowledge, there are at least five varieties in the fields and virgin woods. The smallest, most fragrant, and most delicate of the Eastern native species is *V. blanda*, whose sweet white flowers, streaked with slender veins of blue, are seen early in the spring near every brookside.

The writer of this, forty years ago, has many a time with his children collected in the forests of Kentucky, opposite Cincinnati, these attractive and humble plants, with many other wild flowers, to transplant into his garden, where most of them flourished excellently well under the protection of a little shade from various shrubs, although some of them withstood well the full glare of the sun's rays. We have often thought that the wild flowers of every country do not receive that attention by transplanting them into our gardens, which the beauty of color and form of many of them so richly merit.

A "wild garden" might have a place to itself in many collections, and would constitute a curious, attractive, and interesting department in the *tout ensemble* of all grounds of a villa residence.

Wild flowers are rarely appreciated; but little or no attention is bestowed upon them. They bloom in forest and field, and blush unseen to waste their sweetness. Why are they not cultivated? Authority informs us that they are susceptible of great improvement by being "civilized," and not a few of them are equal in beauty and odor to any that have bestowed upon them years of time. There seems a notion that nothing is of value unless purchased from abroad at a large price. We would not discourage the cultivation of foreign plants and flowers, but would encourage more attention to the wild beauties indigenous to our soil and climate.

Gold Fish.—Gold fish may be kept ten or twelve years (the average period of existence) by using the following precautions: Allow not more than one fish to two quarts of water. Use the same kind of water, whether well or river; change it every other day in summer, and twice each week in winter. Keep clean salt and pebbles at the bottom, washing it occasionally, or replacing with a fresh supply. Use a small net rather than the hand while changing the water. Feed with crackers, yolk of egg, lettuce, or flies, once each week, except in cold weather; remove any crumbs that may remain on the surface after feeding. Do not feed at all from November to the end of February, and but little during the following three months. If there are growing plants in the aquarium, water need be changed but rarely. Keep from sun and in coolest part of room. —*Exchange.*



Rod and Gun.

DEER HUNTING AND TROUT FISHING IN MENDOCINO COUNTY.

We returned a few weeks ago from a sporting trip up the north coast, right amid the great redwood forests. The locality is about one hundred miles from this city, by steamer up the bay, by rail through the Sonoma Valley, and then stage for forty-seven miles to the north fork of the Navarro River. The brook trout (*salmo irridea*) are plentiful for one to two miles either up or down the river from the North Fork House, which we made our headquarters. The north fork is just the kind of stream we take delight in for throwing the fly for the speckled beauties. It is sufficiently wide in its bed, which at that season was partly dry and partly full of nice, deep pools and lively riffles. It is broad enough so that the trees and bushes on the banks do not interfere with the casting line. Partly along this bed, and partly along the shores, there is only a single trail to follow to travel conveniently up this stream. Gigantic redwood trees, a species of Cedar (*Sequoia sempervirens*), rise on all sides, both on the level and mountainous grounds, making the scenery very grand, and almost awfully majestic, wild, and romantic. The scenes also are very lonely and secluded, there being no habitations of any kind for numbers of miles, and near the North Fork House only some logging camps, with large piles of logs across the river in some parts, and nearly damming up the stream in many other places. While fishing we often saw deer feeding or running along the sides of the hills and mountains, when we longed to have our rifle with us to bring them down at long range. But two things can seldom be done well at once, and a gun and fishing-rod can not be operated with very pleasantly together. The country we speak of is full of deer, with many brown bears. The signs and traces of which latter animal we saw several times while returning home on the trail. We used, occasionally, to ride on horseback in this path when we wished to go a considerable distance, either up or down this north fork of the Navarro River. If we had met a bear there was very little danger of his attacking us, as this species of bear—the brown or cinnamon—is, if anything, shyer than a deer, and will as swiftly, nay, more so, rush away from the presence of man. The fierce and formidable grizzly is now quite scarce in Mendocino County, where we were fishing, but in the county north of it it is rather common. They are often very destructive to the farmers' calves, hogs, and sheep, and when they are committing these serious depredations, a party of men will turn out, having baited a particular spot, and surround

and shoot, or lasso, these ursine marauders.

Two of our friends who accompanied us on this expedition were engaged chiefly in hunting deer, having each an improved Winchester rifle. They found it desperately hard traveling in these redwood mountains and valleys, there being in many parts a dense underbrush. They joined a camping-out party of expert hunters, and had a glorious time of it on the borders of a forest, and some of what are termed "Bald Hills." They killed twenty-five deer, among the whole party of six, in eight days. For our own part, not being like our friends in our juvenile years, we made ourselves quite happy and contented fishing for that, next to the salmon, gamest of fish, the brook trout. Sometimes we could, early in the morning or late in the evening, take them with the fly, but in the middle of the day when the sun shone too brightly (the water being always very clear), we used small pieces of chubs, trolling them both on the top of the water and beneath it in the pools, and which were taken by the hungry and eager fish with the greatest avidity. These trout ran generally to about ten inches in length, and afforded, from their numbers and gameness, some capital sport. We had India-rubber wading-boots, reaching up to our knees, with which we could wade most pleasantly and conveniently over most of the shallow places, and when the water was too deep, we followed the trail by the side of the stream. The weather was most delightful during the whole time we sojourned in these magnificent and sweet-scented redwood forests. On our journey there we passed through a thunderstorm, with a small tornado of wind and rain, which latter continued at intervals afterward, during the night; but this is very uncommon at that time of the year, as the rainy season seldom commences here till November, and as to thunderstorms, they are very rare indeed on this coast.

THE CALIFORNIA QUAIL.

Of the partridge family (*Perdicidus*) we have seven well described species belonging to the United States, as follows: Quail, partridge, or Bob White (*Ortyx Virginianus*); plumed or mountain quail (*Ortyx Pictus*); Texan quail (*Ortyx Texicus*); California quail (*Lophortyx Californicus*); Gambetta quail (*Lophortyx Gambetti*); scaled or blue quail (*Cadepla Synamata*); Massena's quail (*Cyrtonix Massena*).

At the head of this list is placed Bob White, for the reason that he is the only one of his family that can speak for himself. He is not a quail, but a partridge, and to designate him from the rest of his kind, it has been settled that he should always be known by his proper and household name, Bob White. In cunning, courage, strength of flight, and for game and table qualities, he is the peer of his race. It is not necessary to write out his history, as every true sportsman and naturalist in the East has his acquaintance. Give him the protection needed and there is never any lack of good quail shooting in its season. Twice this bird has been introduced into England, but he has proved himself so pugnacious to the larger English partridge, that it was found necessary to exterminate him, so that his cousin of the turnip field might live and prosper.

Little is known comparatively yet of the six remaining species of the partridge family here, except, of course, our plumed and California quails. As they are both common in our markets,

and are much in request here for good sport, their habits are now well understood, though little has been written on the subject (although we intend doing more so in the future), unless it be a few scientific descriptions. Our California quail, in size, averages less than Bob White. He is very prolific, and, when young enough, excellent for the table — quail on toast being ranked among our delicacies. He does not lay for the dog near so well as the Eastern or European kind. One may follow a covey of them for half a mile, loading and firing, but flushing but very few birds; if at times some of them, or the entire bevy, happen to take wing, it is only to alight for a moment under or on some tree or bush on their route of escape, and from thence sail off to the first cover beyond. Those who are fond of developing their pedal extremities, let them hunt down a flock of our California quail. But we have them, in portions of country suited to them, in vast numbers, so that when one lot of them has flown almost out of sight, another is soon met with. Thus they keep the sportsman pretty busy where they are so numerous. We have seen in Round Valley, Mendocino County, as many as 150 or 200 in one flock. Of course, these are many bevies together.

In addition to the beautiful plumage, crest, and proportions of this much sought bird, it possesses another quality, and that is its faculty for domestication. We have seen several hundred of them at Suscol Orchards, Napa Valley, come up to the house morning and evening to be fed, and they have very little fear of any person approaching them within 60 or 80 feet. We have known old birds to mate and breed in confinement three months after capture.

The Mountain, or, as it is sometimes called, the Highland quail, is a beautiful and valuable game bird. There is a similarity in its habits to those of the ruffled grouse (*Tetrao umbellus*). He is larger than Bob White, and the most elegantly plumed of the entire American partridge family.

The California quail is rather a handsomer bird than the Eastern one. The male bird, particularly, is very pretty. The crest of these birds is very singular and unlike any of the birds East, being apparently composed of a single feather rising about one inch and a quarter on the head of the male, and terminating in a curved top resembling a nodding plume, or still more a written note in music. The female has a very small top-knot, not more than half an inch in length, a miniature of the male's crest. This singular crest is moved at the will of the bird, which, when alarmed, will often draw it down horizontally, pointing forward. These birds are generally fat and well flavored.

SALMON FISHING.

This month (November) we launch into that most royal sport—salmon fishing. We shall very soon, after the late rains, find them running up the rivers north and south, but especially north of this city. Trolling with a good sized spoon-bait, from a boat or from shore, according to locality, with a triangle of moderately sized hooks at its end, with a piece of red flannel or feather between them and the spoon, is the most effective method at this season, using a somewhat stiff rod. The fly is almost entirely useless in the fall or winter. A good landing net will answer to secure them, but a sharp gaff is better, because your hooks are apt to be entangled in the net work. A salmon of about five or six pounds, or a grilse of one or two, affords lively sport, with their dashing

to and fro, and often many leaps out of the water.

But this boat fishing is rather tame and easy work compared with hooking and playing a large fish, and perhaps in swift water from the bank, when you have to follow him either up and down a river, over rocks and bowlders, through thickets, and sometimes through rather deep water. This will often take hours, and there is an instance recorded in Scotland in the river Ness, where an Englishman had a ten-hours' tussle with a forty-pound salmon, but this is a weight quite uncommon in our California streams, the average here being about eight pounds. This forty-pound salmon was hooked at about 6 P. M., and although his captor was an accomplished piscator, he could not master his rushes or get him to the grass. He, however, with great determination and skill, fought the fish for ten good hours, and the greater part of those weary hours during the darkness of the night. It was not until ten o'clock the next morning that the fish succeeded in getting away, and then by an accident on the part of the plucky angler. He deserved his fish, and it is to be hoped he soon hooked another, though of this we are not informed, and if he did it was very unlikely it was as large as this one.

When you have anything like so powerful a fish on your line, if you have not a very heavy rod, and very strong tackle, the fish will do what he likes with you if you are on land. A boat makes the handling very much easier, even with a much lighter rod and tackle, as you can move the boat to correspond with the fish's actions. To exemplify the case, let any man hook a fresh run fifteen-pound salmon, with a trout fly or salmon roe for bait, fine tackle, and single-handed trout rod, and see what you can do with the fish. If he is a cool and expert angler, and has plenty of room, he may kill the salmon, but it will be a work of time. At first he will be as powerless as a child; the fish will go where he pleases—you dare not attempt to stop him; to do so would be to instantly lose him; you follow where he leads, and for the time he hardly heeds the restraint. At length, he begins to know he is restrained, and his fury commences. If you can make him fight fast, and exert himself for some minutes, you may get him a little weary, and coax him near enough to get a gaff into him; but the chances are he sulks; if so, you might have a long job before you, as the gentleman above mentioned, and with the same result.

A big fish can not be restrained much by force, and a forty-pound fish, or even some smaller, on an ordinary rod and tackle, must be gently handled to be brought to gaff. The largest fish sulk the most, and when they do rush, their power is so great that it is all but impossible to resist them. All you can do is to follow where they go, keeping a steady strain on them down the stream. The first object with a big fish is to aggravate him; play with him very light, and he will often permit you to gently guide him to some place where you have directed your attendant or friend to take his stand, gaff in hand. You then gently drop the fish down the stream to the gaff, and the fish is out of the water before he has begun to fight much; if he is pricked by the gaff, or frightened, then your work is cut out for some time—you may not get another chance for an hour. He will rush when he has strength, or a good chance of breaking you, or he will get into some eddy or hole and lie like a stone—to move him is often impossible with any safety. The boat trolling is the easiest, but not so meritorious.

Selected Articles.

ROCKERIES.

Rockeries, as they are called, should never be placed in narrow grounds or in any grounds of limited extent. Not unless they can be made to mingle, so to speak, with other surroundings; not unless the beginning or ending can be made to conceal their glaringly artificial character, should they be placed in *any* grounds whatever. There is nothing which strikes the observer as so ludicrously spurious as an attempt to render objects shapely and beautiful, that in nature we behold only among the rudest, most rugged scenes. A rockery is therefore never ornamental—nay, it is never anything but a monument of untutored taste, unless unstudied clumps of vines, shrubs, or natural breaks or hills, the banks of streamlets or of lakes suggest at least the possibility of the rocks in whole or in part having existed there in a state of nature.

For those, however, who do not agree with us in these views—and that there are those who do not is shown from the many lugubrious mounds and circles of rocks to be seen in the front gardens of cities, villages, and country dwellings—we desire to name a few plants which we know to be well adapted to rockeries, as well as to suggest a mode of constructing them that shall absorb the rain and in a measure retain it for future use instead of throwing it off, forming cavities and ruts between the rocks, washing away the surface soil and exposing the roots of the plants—while, except in long storms, the moisture penetrates to an inconsiderable depth and artificial watering is again required in a day or so. A rockery may be so constructed as to hold water as well as the level earth—and either this must be done or only those plants used which do not mind drought. Such plants, however, are generally those of low stature and of a confined leafage that are late in clothing the rocks with a mass of verdure upon which in all rock-works their attractiveness chiefly depends.

As to construction—let us select flat or flattish stones as large as are available. These answer every purpose of round or thick stones and allow of greater contents. Besides, they are more easily handled and fewer go further. Mark out upon the surface of the ground the outline desired, and set the stones perpendicularly, or with the tops inclining inward, on the broadest edges so that the most acute shall point upward. Let each stone overlap the preceding one a little. These may be held in place by sticks driven inside for them to rest against. When we have thus completed the first tier of stones (let us suppose them to average two feet in height), fill in over the apertures and cracks between the stones or lappings with matted grass, moss, old carpets or oil-cloths, and then throw in the soil (muck is excellent), making it most compact against the moss or other lining and loosest toward the middle. When we have filled in to the height of eighteen inches, place the second tier of stones (half the size of the first) so far within as to allow a sufficient margin for the first tier of plants. Proceed with the second and third as with the first—not forgetting the lining—until the last and highest surface has become so narrowed as not to admit of another tier, and the rockery is ready for the plants.

It will be observed that, constructed in this manner, the rain will freely make its way through the more porous middle soil instead of running off; that it will be held somewhat by the rubbish

lining which further acts as a non-conductor to the heat from without, and that a degree of moisture may in this way be provided which removes at least one of the foremost objections to these, at best, objectionable structures, viz., that with occasional watering they need never dry out.

The surfaces of these rockeries before they are covered with verdure or during the cold months, however constructed, are extremely unsightly. We know of one instance, nevertheless, in which this unsightliness has been in a degree mitigated by the use of paint—paint applied in the rudest manner. First the surface was given a coat of drab, and before drying was splashed, veined, and inosculated with black and many colors. In a short time the weather so bedims the garishness of the coloring as to impart a natural appearance, inducing many to ask in all sincerity (as we have been assured), "Where did you procure those rocks?" Oil paint upon rocks in dry places will endure for many years.

Let us plant in the earth close to the base of the rocks, swift-growing vines. Of these we should choose first the Madeira or Mignonette Vine (*Boussingaultia basseloides*)—the tubers of which may still and even later be obtained—whose fresh, crisp leaves, branching habit, and sweet blossoms, though late, render it everywhere the most prized of half-hardy vines. Next, the plain *Cobœa scandens*, which, for size of leaf, affluence of flowers, and rapidity of growth is not—so far as we are aware—equaled. Young potted plants may be obtained of any florist up to the first of July or later. *Tropœolums*, *Thunbergias*, Balloon Vines (*Cardiospermum halicacabum*), *Clematises*, are well adapted to our purpose. Among hardy vines for the same purpose we may mention the Honeysuckles (especially *Lonicera Belgica* and *L. aurea reticulata*), Wisterias, the blue Passion Vine (*Passiflora cœrulea*) which, however, is *not* hardy—and *Vitis heterophylla variegata*, one of the finest ornamental vines in cultivation. The variegation of its leaf—white, rose, and green—is beauty enough, and its light-blue waxen berries that mature in the fall are a rare and additional charm. The vines are more or less killed by severe cold, but the roots we have had never injured, and its spring growth is so rapid that the winter destruction of the top need not be considered against it. We do not know of a prettier hardy vine or one that thrives better in rockeries, whether planted at the base or among the rocks themselves.

Such hardy vines as *Aristolochia*, *Akebia*, *Tecoma*, *Periploca*, *Celastrus*, etc., are not selected, because they seldom make much growth the first season after transplanting, and, besides, are better suited to greater heights and areas than those of the rock-works of which we are speaking.

For the pockets and crevices of the rocks in the way of vines, we should select the Cypress Vine (*Ipomœa quamoclit vulgaris*), in its three colors—white, rose, and red. Cypress seeds well soaked in boiling water and planted in wet sandy earth exposed to the full heat of the sun will, as we have before stated, germinate in two or three days, and, as they love heat, will soon overtake those started earlier. Nothing is prettier than their light, airy foliage, or better adapted for our purpose. *Pilogyne suavis* is of late introduction, and, if judged from the engravings and comments of those who offer it for sale, would also prove satisfactory. Such plants of a more or less vine nature as *Saxifraga sarmentosa*, *Tradescantias*

(green, purple-variegated, white and green), *Sedum Sieboldi*, plain and variegated *Sedum acre*, *Lysimachia nummularia* and *L. n. aurea*, *Linaria cymbalaria*, and the *Vincus*, need only to be named.

For the marginal tiers we should use *Phlox subulata*, *Plumbago tarpentæ* and *capensis*, a few *Portulaca* (these last may be transplanted even in midsummer); *Polypodium vulgare*, and other hardy Ferns for the shady portion; *Lobelia*, *Panicum variegatum*, *Gnaphalium*, *Koniga maritima var.*, *Aloe*, and succulents, such as *Echeveria*, *Pachyphy-tum*, *Klenia*, *Mesembryanthemum cordifolium*, and *M. c. variegatum*.

For the surface in the top of the rockery, where the most striking specimens should be employed, *Agave*, *Beaucarnea*, *Aspidistra*, *Cactus*, *Yucca*, *Dracœna* would prove effective, one, several or all, according to the area to be planted.

Those who have "a good mind" to arrange a rockery, can do so now as well as at any time, and the above-mentioned plants may be easily obtained in pots—thumped out in their respective places, and know not of the change.

We are not willing to offer any great encouragement to the erection of rockeries—the most nondescript things ever introduced for garden ornamentation. But for the many of different and possibly better tastes, we have told (so far as space permits) what we know about them.—*Rural New Yorker*.

HONEY PLANTS OF SOUTHERN CALIFORNIA.

J. W. Sallee writes to the Anaheim *Gazette* the following on honey plants: You see here in this little valley a variety of shrub or weed which we call "wild Alfalfa." It is very full of bloom, a small yellow flower, and produces a great deal of the nicest honey. And this rough grease-wood bush—see what a pretty blossom it has! Bees don't work much on this and these other large flowers you see, the cells being too deep. But this shrub, with a bunch of flowers on the ends of the twigs, of various colors, we call wild Buckwheat; it produces a great deal of nice honey.

You see over this mesa a large field of white Sage, just coming into bloom. This is our brag honey plant. We will secure a large amount of honey from this plant. It will remain in bloom for about seven or eight weeks. All that white bloom you see on the sides of the hills is Black Sage-bloom. It has been out about four weeks, and will remain in bloom two or three weeks longer, and makes a quality of honey nearly as nice as the White Sage. But at present the bees prefer the wild Alfalfa.

You see all over the hills, and especially in these small valleys, those clumps of bushes. That is the Sumach, and will bloom in July, continuing for six or eight weeks. It secretes a large amount of honey, but of a red color. Bees gather honey probably more rapidly from that than any other flower. Now take a general view of the hills and valleys; you see, probably, more flowers than you ever beheld before at one view. If there were 100 hives of bees on every square mile of land, I scarcely believe all the honey secreted by these flowers would be gathered. And to think of it all going to waste, just for the want of gathering! It is enough to make a man grow eloquent to stand here on the top of this hill and look at this beautiful mountain scenery—the healthiest on earth—all covered with beautiful flowers, stored with the delicious nectar, and to think that it all, or nearly all, goes to waste

for the want of gathering, without anyone, save a few isolated bee men, to enjoy and appreciate it! Why, sirs, we have the prettiest part of the country. You can not turn your eyes in any direction but you behold a different scenery—not that monotonous extension of level land of the valleys, but here a beautiful rolling hill, all covered with green grass; there, a rough mountain side, overgrown by rough mountain brush; yonder, a precipitous rough cliff of projecting rocks, each hill alternating with a lovely little valley, with its clear stream of running water. Now, this mountain country is good for little else but bee raising. It is true, much of the land could be put to fruit, and do as well as the valley land, probably better; but, sirs, there should be a bee man on every thousand acres at least, with bees enough to gather thousands of tons of honey now going to waste. Many say, "Is the bee business not going to be run into the earth?" I answer, "No!" The honey producing district of California is only a narrow strip on the west side of the mountains of Southern California, extending from Santa Barbara to the State line south. And compared with this State alone it is a very small portion, while compared with the whole United States it is but a drop in the bucket.

CALIFORNIA SNOW PLANT (*SARCODES SANGUINEA*).

This singular and wonderfully high-colored and tender habitant of the snowy summit of the Sierras, has attracted much attention from botanists and professional gardeners, as well as claimed the admiration of all that have seen it in its purplish scarlet splendor, growing like an icicle of blood from the cold soil under the shadow of dark evergreens which cluster upon the brows of towering mountains.

After all that has been said about the impossibility of propagating this plant, and all the speculations and assertions as to its being a parasite from the roots of the Pine, etc., this plant is actually growing from the seed in the conservatory of Dr. A. W. Saxe, at Santa Clara. The Doctor—who, by the way, is something of a connoisseur of fine arts, plants, and flowers, and who finds pleasant home recreation during the moments spared from tedious professional duties, in the study and care of his quite extensive collection of rare and beautiful specimens of the vegetable kingdom—is his own gardener, and takes a pride in noting the various experiments which he makes.

Last year he received from Truckee several Snow-plants, which were taken up near Donner Lake, and, with the earth still adhering to them, transplanted into a common candle box. Doctor Saxe placed them (still in the box) in a sheltered room under the tank of the windmill, where it was cool and moist. After the plants dried up he pulled them out of the earth and crumbled the seeds and crowns of the plants in his hands, dropping them into the holes where the plants grew. He left the box where it had been placed in the tank room, and took no further care of it. And now there are two fine plants, as highly colored and as fine as any that can be found in its native haunts. The soil in the box is the same that was taken up with the plants, and is of a shaly, basaltic, non-sillaceous nature. We must give the Doctor credit for his success, as being the first gardener that has yet propagated the Snow-plant. The Doctor is not a man to believe so much in the mystery as in the *rationale* of things, and by studying the natural

habit of the plant he has succeeded in filling the requirements of its nature.

ORANGE CULTURE.

The experiments heretofore made in growing the Orange in this latitude have demonstrated that the foothill regions of this county are well adapted to this luscious fruit. But now comes Mr. D. A. Stearns, an Orange culturist of Los Angeles, and says that Oranges can be grown with a profit in any portion of the valley. Mr. Stearns was in this city recently, and from him we learned some facts in regard to this business which may be of more than ordinary interest to our readers.

He says, first, that our people have a wrong idea in regard to the kind of soil best adapted to the Orange; that instead of a sandy soil, they do best in a heavy clay loam. Another mistake is that the trees set out here are too much shaded; that in extreme caution to protect them from frost and cold, they are also deprived of sufficient sunlight which is a necessity for the production of a thrifty bearing tree. He attributes many of the failures in growing the Orange in the valley to the fact that the trees have been nursed in hothouses, and have thus been weakened and enervated to such an extent that they can not endure exposure to the natural atmosphere. To make a really good tree, the seed must be sprouted in a natural soil without any artificial adjuncts. Mr. Stearns says, also, that the practice of putting manure around the trees is very injurious, as it poisons the sap, stunts the growth, and in many instances entirely destroys its life.

Our climate, he says, is really better for this fruit than that of many portions of Los Angeles where Oranges are most successfully grown, and better even than in Italy, where they have ice and frost, and where for a week at a time during certain seasons of the year, the Orange trees are covered with snow.

In order to give Orange culture an impetus in this section of the country, and secure its success, Mr. Stearns has for several years past devoted his attention to producing a hardy variety which will thrive in much higher latitudes than that of the Santa Clara or Sacramento country, and he thinks he has achieved a success in this line. His nursery is on the Laccorowich tract close to Los Angeles city, and just across the river. Here he has ready for transplanting a large number of Orange, Lemon, and Lime trees, which he is certain will do well in any locality in this valley. These trees he is anxious to introduce here, and will offer advantageous terms to all who decide to go into the business.

We have no doubt that many of our fruit growers will avail themselves of this opportunity, provided they consider assurance of success sufficient to warrant an extensive outlay. An agency for these trees will be established here, and parties desiring information on the subject can obtain it either from Mr. Stearns or his representative.—*San Jose Mercury.*

MOUNTAIN GRAPES.

That the mountains and foot-hills are the natural home of the Grape can no longer be questioned. The experiment of raising the finest foreign varieties on the mountain sides has proved more successful than the most sanguine friends of the theory predicted. It has been claimed that a majority of the valley land is too rich to produce good Grapes, and the thin, mineral lands of hilly France and Spain, which grew the

finest flavored wine and raisin Grapes in the world, were pointed to in substantiation of that theory. Of late years a number of small vineyards have been planted on the hilly lands of our own State, and the result has been most gratifying. The finest exhibit of Grapes at any of the Fairs this year was to be seen in the San Jose Pavilion. They were grown in the Santa Cruz gap, three miles above the town of Lexington, on a steep mountain side, some 1,400 feet above the level of the sea. A few years ago Mr. Feeley concluded to try the experiment of Grape-growing, and accordingly cleared the Redwood and Pine trees from a small piece of ground, and put out half a dozen varieties of foreign Grapes. His exhibit at San Jose astonished the old vine-growers of that section, and set them to thinking. The stock of Flame Tokay Grapes from this vineyard are nearly double the size of the Grapes in the vineyard from which the cuttings were taken, while the flavor is fully as fine, if not superior. One bunch weighed six pounds, and the Grapes were the size of large Cherry Plums.

Although the Santa Clara valley is considered the home of the Grape, and prices are at the very lowest notch, the products of this mountain vineyard sell for almost double the regular price in the local markets. This vineyard is situated within the limits of what is known as the "warm belt." There is an almost entire absence of frost, and they are never troubled by mildew. This belt extends to both sides of the Santa Clara valley, but the western hills and mountains are better adapted to fruit and Grape-growing than the hills on the opposite side. The Santa Cruz mountains have for years furnished the lumber used by the inhabitants of the valley, and as fast as the Redwood forests are cleared away the ground can be planted to vineyard and orchard. There are no little valleys, but if the soil will produce such Grapes and such fruit and nuts as were exhibited, the day is not distant when it will pay to dig terraces in the sunny mountain sides and cultivate the tree and vine by hand.—*Call.*

VEGETABLE GROWTH IN CALIFORNIA.

It is doubtful if there can be found any place in the world where vegetable growth is so rank as it is found to be in California. A house is built upon the dry and barren plains, a well dug, and in a very few years it resembles a garden of luxury and repose. Such places can be found all over the plains in Butte County. It is true that there are hundreds of residences in the country that have hardly a tree to shade them from the hot, blazing sun, but this is not the fault of the earth; it is only a proof of the want of good judgment on the part of the owner, for if trees had been planted, and a little care bestowed upon them, the residence would have been surrounded by a green, shady grove, and that, too, in a very few years. To show just how long it takes to make a beautiful place we submit the following facts: Just below town is the residence of Wm. Edmonds, for a long time Surveyor of this county. He is an old gentleman, and not able to do much hard work. He moved to this place in December, 1873. It was a bare, barren, gravelly spot, with as little prospect of growing anything as any sand-bank that could have possibly been selected. He went to work and put up a small house and barn. He next turned his attention to getting a supply of water for his place, which does not exceed two acres. Now mark the result: Last Saturday morning,

while taking a walk, we stepped inside his yard and took a walk with him through his garden, and here give a list of the things there growing. A lot of Pampas Grass that grew from two seeds planted one year ago, was eight feet high and at least twenty feet in circumference. There were some American Chestnut trees three inches in diameter, fifteen feet high, that grew from the seed planted three years ago. White Cherry trees four and one-half inches in diameter, twenty feet high, four years old from the seed, that bore an abundant crop. There was a Mulberry tree two years old that was a good-sized tree in full bearing. There were also Apple, Peach, Pear, Plum, and Quince trees that were of good size and bearing heavy crops. The Pear trees had a second crop on them that were growing finely. The first crop was about failing. Two of the first crop weighed three pounds. The Quinces were large and still growing. A Pomegranate tree, planted some three years ago from a small slip, was full of large, ripe fruit. On a Grape-vine were some of the largest and most beautiful clusters of Grapes that we ever saw. One bunch would weigh six pounds. We have not referred to the thousand and one flowers that were scattered around, making the grounds beautiful, and filling the air with a thousand sweets. This change has all been accomplished since December, 1873, and no extra effort has been made. The leisure hours about home have been employed in this work. Every person about town will agree with us that a more uninviting spot for a garden could not have been selected in the county. It is true he has had considerable water to use, but any rancher with his windmill has just as much running to waste as he has utilized. It follows that any rancher could have had as cool an Eden as Mr. Edmonds has if he had been so disposed. We have given the above to show the capabilities of our most barren spots to produce vegetation. — *Oroville Mercury.*

THE CHESTNUT AND THE WALNUT.

It has, for many years, been a matter of wonder to us, why, in planting out shade and ornamental trees, these two varieties should receive so little attention. They are, both of them, symmetrical in form when allowed room for full expansion, rich in their verdure, which does not fade until mastered by age or ripened by premature frosts, and are healthy and long-lived in their habits.

Some years since we transplanted both Chestnut and Walnut trees, for the sake of adding variety to the scene. Each kind have been for some years in bearing fruit, and have already paid a dozen times over for all the labor and care bestowed upon them. Yet they are young trees now, and promise to afford the boys of three or four generations the pleasure of nutting under them. It saves them many a disagreeable tramp on a cold frosty morning, to step out a few rods and fill their baskets with nuts, instead of climbing the hillside, and perhaps find some strolling trespasser had anticipated their visit, and cleared the ground for their reception. Besides, the fruit of the Chestnut is materially improved by raising it in open fields, in a favorable soil.

The Chestnut is a tree that requires room for its full development, the lower branches often extending from fifty to sixty feet from the trunk. When raised in open land, it should be allowed to branch out as near the ground as it is disposed to, for the lower the branch-

es the less it will be disposed to shoot up to an inconvenient height. The form of a perfect top is conical, and with its broad arms and dense foliage it shows a beautiful pyramid of verdure in summer, or in this climate from the 20th of July to 1st of August, the monotony of its verdure is broken by an intermixture of long white catkins from which the burr originates, giving the grove or field that beautiful appearance which affords so agreeable a charm to the eye.

The Walnut is less ambitious than the Chestnut, in the acquisition and occupancy of territory. Its wood is of slower growth, and we have never seen among aged trees any that assumed anything like the size of the matured Chestnut. Two Walnuts will thrive and grow well on the same territory that one Chestnut would require. We have heard as an objection to the Walnut, that grass will not grow under it, or within the circle of its roots. This is not the case with us, and if it were, we should hold it to be no objection, for the value of the tree and its products is much greater than the small amount of grass the ground it occupies will produce.

The love of nuts is almost universal, and hence we see in their season a general rush to the woodlands where they grow, to secure a winter supply. Heedless men and boys often inflict severe injury to the tree in securing their imaginary quota. Why does not every one who has land transplant them to open fields or to the orchard, and raise a supply of better fruit, independent of their neighbors, and more convenient of access? This we are confident is one of the things that will be done, and we are not mistaken if, in this Centennial year, this thing is not begun in earnest.—*Germantown Telegraph.*

LEAF MOLD.

The trees in Hyde Park, London, are exhibiting signs of blight and decay, greatly to the regret of all who frequent that delightful and fashionable place of resort. It is suggested in *Hardwick's Science Gossip* that the cause of the trouble is the careful removal of the fallen leaves and fruit which form the natural food of the trees. A portion of the phosphate or oxalate of lime, which the trees have drawn from the soil, is stored in the tissues of the leaves and fruits in the form of crystals. It is this which renders leaf mold so valuable as a manure. Therefore, when the tree sheds its leaves, they should be allowed to remain around its base, in order that they may restore to the soil the important constituents which they have taken from it. When they are habitually removed the soil becomes impoverished, and incapable of sustaining a vigorous vegetation. "Had the old forests been always cleared of the fallen leaves, there would long since have been a decay of that noble vegetation which still excites the admiration of the traveler. Rich and deep soils may afford for long periods a sufficiency of calcareous salts for the preservation of the plants, but not so shallow and poor soils. The quantity of saline matter annually taken up, even by a single tree, from the soil, and appearing as microscopic crystals in the plant, is prodigious; and unless the saline material be returned to the earth, exhaustion thereof must sooner or later occur."

EFFECT OF SUNLIGHT ON VEGETATION.

Chemically speaking, sunlight is composed of three distinct parts or rays, the functions of each being distinct and unlike. These are: 1st, the heat ray;

2d, the chemical or actinic ray; and 3d, the illuminating ray. These may be separated by passing common sunlight through certain media. For example, a piece of glass stained yellow allows the heat and illuminating rays to pass through, but completely strains out the actinic or chemical rays. So a piece of blue glass allows the heat and actinic rays to pass through, keeping back nearly all the illuminating rays. Recent investigations and experiments have conclusively shown that the vegetable world is almost entirely indebted to the effects of the actinic rays of light, rather than to the illuminating rays, for the many and varied changes through which it passes, from the germinating seed to the blade, the blossom, and the fully developed seed-bearing growth. Were the chemical ray entirely taken out of our sunlight, seeds would not germinate in our gardens and fields, foliage would lack its peculiar characteristic color, flowers be shorn of their beauty, and fruit would not attract by its luscious flavor. Experiment shows that seeds germinate several days sooner in a hotbed covered with blue glass than under the same circumstances when covered with clear glass, and that they germinate with great reluctance when covered with yellow glass, if at all. The physician and chemist know very well that it is the actinic ray of light that decomposes their chloroform, iodine, etc. Hence they confine them in yellow glass bottles, the color of which completely protects them.

THE BANANA.

It is acknowledged that no other plant will yield as much food for man on an acre of ground as the Banana, or yield it with so little outlay of labor. Where the mean temperature is about 82° Fah. the yield per acre is about seventy-five tons. Even when the mean temperature is as low as 75° or 76°, its cultivation is still advantageous; a mean at five degrees gives a middling return, but when it sinks to 66°, the product fails to be remunerative. Under the most favorable conditions, a single tree will yield three crops in a year, of seventy-five pounds each. It is propagated by offsets or suckers, and requires a soil rich and humid, but care must be taken that it be well drained either naturally or by artificial means. Of the total weight of the fruit nearly thirty-seven per cent. must be deducted for the rind, the entire remainder being edible.

While the Banana is green it is mainly starchy, but as it ripens this is changed into sugar and gum. In the tropical countries where it grows it is mainly used green, stripped of its rind, and roasted under hot ashes. It is often dried in a baker's oven, by which it loses sixty per cent. of its weight and becomes hard and translucent, and is used instead of biscuit in forest journeys and coast voyages by the natives. The fruit is very nutritious even when once half-ripe; six and one-half pounds of it, together with two ounces of salted meat, have been in many cases the regular daily ration of food for laborers in Banana growing regions. It was proposed many years ago to grind dried Bananas to flour for export to Europe, as a staple article of food, but the project seems to have come to nothing. Considering the large amount of starch contained in the unripe fruit, and the sugar in that allowed to ripen, it would seem perfectly feasible to use it in the manufacture of alcohol, etc., in the same manner that potatoes are now applied to such purpose.

THE NEW AMERICAN PLUMS.

The Plum is confessedly a valuable and popular fruit, and many have been the attempts to obtain varieties that would repay the care of the cultivator with an abundant crop. During the last twenty years we have introduced many of the choicest sorts from Europe, together with the so-called South American varieties (red and yellow); and after producing some fine timber trees, watching the hopeful-looking fruit spurs, and still more promising blossoms year after year in vain, or with only an occasional specimen, we have received a tree each of two native Southern Plums, which have proved to be an unqualified success. These varieties are improved seedlings of the Chickasaw Plum (*Prunus Chicasa*), which latter is found wild over a large portion of the Southern States.

The Wild Goose Plum is the earlier of the two. The fruit is large, bright vermillion color, with numerous small white dots; stalk slender; flesh juicy, vinous, pleasant—adherent to the stone. Tree vigorous, leaves narrow, light green; very productive, and maturing early. As a market fruit it is very desirable, being of fair size, good quality, and beautiful color, as well as ripening before the earliest Plums from Sydney are in the market.

The Newman Plum is smaller than the above, ripening immediately after it, of similar appearance. Fine tree, very productive, foliage somewhat smaller than that of the Wild Goose.

These trees are very distinct. The smooth, fine, thornless wood, with beautiful narrow (lanceolate) foliage, and in early spring the abundance of snowy blossoms, bringing to remembrance the English May Thorn, makes them very desirable additions to the orchard. They also have the advantage of bearing young. Scions have been distributed among the Brisbane nurserymen, as also among some Sydney and Melbourne ones, so that farmers and orchardists may be able to obtain these valuable varieties in quantity and at reasonable rates. The seed of these Plums should all be sown for two purposes. First, for raising new and desirable varieties; and the other for furnishing stocks for these and other Plums as also for some Peaches and Apricots. In the meantime, we must propagate on the Peach stock, either by budding as low down as possible, or by crown-grafting underground. The trees are very hardy, and adapt themselves to a greater range of soil than ordinary Plums, and their introduction gives the farmer and fruit-grower another reliable and marketable crop. There are other varieties of this type, and some hybrids, which we are introducing, of which we hope to report progress at a future time, and which we trust will prove as great a boon as the foregoing have done.—*Augusta (Ga.) Sentinel.*

TRAFFIC IN NEW ENGLAND FERNS.

Among the new industries of the last few years is the collection and sale of the creeping Ferns so common in our New England woods, and, until last year, unknown beyond the Hudson. This business originated at Greenfield, where it is now carried on extensively, and was begun here about four years ago. It is now in the hands of E. W. Clarke and Miellez & Co., who sell many thousand dollars worth annually. But few bunches were sold at first; but as the demand has steadily increased, the woods east and southeast of Springfield, in Longmeadow, Wilbraham, and Somers, have been carefully gleaned.

Often the value of the Ferns growing on a single acre of woodland will exceed that of an acre of corn, and wood lots have been bought at high prices solely to control the Fern trade.

The season for gathering these Ferns begins about the middle of August, and lasts till late in the autumn. Originally fresh Ferns were sold, and those largely for Christmas decorations, but the trade in the pressed Ferns is now by far the largest part of the business, and gives employment to a number of hands. One dealer in this city keeps about twelve girls at work pressing. A dozen Ferns are pressed in one "string," and one New York house has ordered 20,000 strings. The pressed Ferns are sent all over the United States and Canada, many going to California. They are used mainly for wall decorations, and the ladies will doubtless be surprised to learn that their western sisters often pay several dollars for Ferns like those which can often be obtained hereabouts during an afternoon's drive. The native Fern, like the native American, resists all attempts at civilization, and is an entire failure as a house plant.—*Springfield Republican.*

MOSS ROSES FOR MARKET.

Moss Roses are largely grown for the London markets. They thrive pretty well under trees, and are very hardy and floriferous. Light, rich, and deep ground suits them best. Two rows of these Roses are generally planted between Currant and Gooseberry bushes, about two feet apart, but as suckers speedily make their appearance, all traces of rows become lost, and the result is a broad band of Roses, some two and a half or three feet wide, occupying the central space between the bush fruit. Under fruit trees, where no fruit bushes exist, they are grown in lines two and one-fourth or three feet apart, and interspersed with sprouting Broccoli, Brussels Sprouts, Potatoes, or Shallots, and they are also grown in the open ground, about the same distance apart. After they have done blooming, and have made good wood, they are laid on both sides of the rows, and in October or any time between that and the following March, the layers are lifted, and after the roots have been dressed and their tops shortened a little, they are planted out in perfect rows from two to three feet apart, or, if space is scarce at the time, thickly in rows a foot or eighteen inches apart, where they remain for twelve months before being finally planted out. They are pruned very closely in winter, and in spring they begin to form flower buds, almost as soon as the leaves make their appearance. In hot summers, and indeed whenever convenience permits, the spaces over the roots, two or three feet in width, are mulched with litter, which saves them from drought, and also acts as a stimulant.

NEW PLANTS.

Liatris Pycnostachya.—This plant is found wild abundantly throughout the States of Kansas and Texas, and in the Indian Territory, and though long known to botanists, and now and then sent here by correspondents during the past dozen years or more, no attempt to introduce it to general notice extensively has been made that we are aware of. During the past summer we saw a whole row of it in the garden of a florist, and the effect of so large a quantity was beautiful in the extreme. The plants were raised from seeds brought originally from Southern Kansas in

1873. If sown in the fall or winter, the plants bloom the next year, but success follows when sown in the spring, and the plants have a season's growth before flowering. The roots are somewhat bulbous, and when once had will bloom well for several years. There are some twenty species of North American *Liatris*, but this is perhaps the handsomest of the whole. The flowers are rosy purple; spike about one foot long. They commence to flower at the top of the spike, and the blooming progresses downward. Like so many beautiful plants from the West this has not been known long enough to get an English name, and we suppose the Greek one will be considered hard by the ladies, and pedantic by the average man. The settlers call it "Fire-weed" and "Sky-rocket Plant," but as these names are already given to scores of things, and will be to as many more, it is hardly worth while holding on to them. The Eastern *L. scariosa* is known as "Gay Feather," suppose we all agree to call this the "Kansas Gay Feather." There are other species of *Liatris* in Kansas, but as this is the best, let it be *the* one.

Hybrid Penstemons.—As the Penstemon thrives so well in our gardens, it is worth notice that the Germans are improving some species remarkably. The best strains are hybrids between *P. Hartwegi* and *P. gentianoides*. These do not require protection in our California winters.

Retinospera Leptoclada.—It should not be forgotten by purchasers—is the same thing as the *R. squarrosa* of some English catalogues.

Hydrangea, "Thomas Hogg."—This beautiful pure white variety of *Hydrangea hortensis* is now ready for sale, and has been sent to England for distribution. It will no doubt be one of the most popular plants sent out from the English nurseries, and is expected to yield the parties concerned an immense sum, which their enterprise and industry well deserve.

Asperuca odorata.—This pretty herbaceous plant, says *l'Hort. Belgique*, enters into the composition of the German perfume known as "maitrank."

Viburnum plicatum.—This, the Japan Snowball of our gardens, is becoming well known in our country, where it thrives well. Its hardiness and great beauty will long insure popularity for it. It does not seem to be so well and favorably known in England. It forms the subject of a full page engraving in the *Gardener's Chronicle*.

A New Hardy Tree—Cedrela Sinensis.—In 1862 a tree was introduced to France, supposed to be a kind of Ailanthus. It has now been found to be of a different genus, and is *Cidrela sinensis*.—*Gardener's Monthly*.

Warm Water for Plants.—Every year the practice of using water quite warm to the hand, grows in favor with me, and now I could not give a plant the smallest sip of cold water, being sure that it would injure it. Saucers are quite needful, and every pot should be supplied with one, and if it is filled with boiling water every morning, it will add to the luxuriance of the plant, and frequently no other moisture will be needed for several days. The contents of the tea-pot are also efficacious in plant growth, and the tea leaves can be added in small quantities to the soil of the pots. Ivies are always beautified by an application of tea leaves and tea, and it is an excellent thing to wet a sponge in tea and moisten them with it, as it wipes off all the dust which accumulates upon them continually.—*Cor. New England Farmer.*

Editorial Portfolio.

OUR FRONTISPIECE.

There is probably no flower that has grown into popularity more rapidly than the Gladiolus. Of comparatively recent introduction, the few species we once possessed were but little grown, and not at first generally in favor. For many years only one or two species were in cultivation. Experiments had often been made to effect hybridization between these, and the more slender-growing, showy-flowered greenhouse species. The Rev. Mr. Herbert, of Spofforth, England, for many years experimented in this direction, but with uniform ill success. The question was, however, definitely settled by the production in Ghent of the hybrid known as *G. Gandavensis*, which, retaining the vigorous habit of *G. psittacinus* and the yellow throat, had yet the brighter colors of the more showy *G. cardinalis*. To this variety we probably owe the many showy kinds popularly known as "Gandavensis hybrids."

Many fine kinds were imported from Europe, but our amateurs were not long content to import Gladiolus, and American seedlings soon made their appearance. It was found that our climate, and especially California, was better adapted to their culture than that of either France or England, and many turned their attention to this plant. The result has been the production of seedlings in immense variety, a great proportion of which are far better than any we can import. Their culture is very simple. In the first place, a cold, damp, close soil is unfavorable to the plants. Rank manures are also injurious, and everything of a heating tendency causes disease. Plant the bulbs from four to six inches deep, according to the size, the largest being planted deepest. Soon after the shoots appear give the first tying; a second being necessary when the flower-stalk appears. After the bloom has faded, cut off the flower-stalk, unless it is desired to ripen seed; and in this climate they may be either taken up in October, or left all the winter in the ground. Indeed, we may have Gladiolus all the year, if consecutive planting is resorted to. If the bulbs are taken up, dry them in the sun for a day, trim and clean them, and preserve them until spring in a cool, dry cellar. Many varieties produce seed freely. The young plants grow rapidly, and generally here bloom the second year.

We know of no greater pleasure in our garden than watching beds of seedling Gladiolus. Every flower is a new revelation different from the others, like Pansy seedlings, unlike its companions, and often far finer than imported varieties.

We had almost forgotten to speak of the Gladiolus as a parlor plant; not for parlor culture, but for ornamentation. For cut-flowers it has hardly any equal. Place a spike in water, of which the lower blooms are just opening; it will go on and expand every flower, often continuing weeks in beauty. The following are comparatively old varieties, of moderate cost, and can not fail to give satisfaction; colors may be ascertained from florists' catalogues: Isoline (the earliest bloomer), Adonis, Pluton, Vulcan, Osiris, Pegasus, Ceres, Goliath, Brenchleyensis (most brilliant for massing), Vesta, Madame de Vatry, Ophis, Canari, Berthe Rabourdin, Madame Leseble, Mars, Napoleon III, Junon, Reine Victoria, Rembrandt, Prince Imperial, Madame Souchet, Belle Gabrielle, Madame Binder, Neptune, Sulphureus, and El Dorado. We might go on almost indefinitely with the list.

There are now more numbers quite as good, and even better than those we have mentioned; indeed, all are showy, effective, and highly worthy of culture. In setting the bulbs, the best effect is produced by planting them from nine inches to a foot apart each way; and, where each one is tied to a stake, the effect is very fine when in bloom.

Seed of the Gladiolus gathered this fall should be sown next spring in frames or in the open ground, covering them not more than a half inch deep. Keep the bed constantly moist. Gladioli like an open position, and should not be surrounded by shrubbery, etc. It is proper to change their locality every year or two.

Finally, most of us who are interested in plants, are possessed of an especial fondness for particular flowers, of which our friends, who view them through plain glasses, can feel but a slender appreciation. But, whether we view the Gladiolus as regards its prolific reproduction, its blooming period, its easy culture, its compactness, its freedom from insects, or its incomparable spikes of bloom, if it does not justify the furious enthusiasm which once made a Tulip worth more than its weight in gold, it certainly merits to be ranked among our choicest flowers.

WORK FOR THE MONTH.

Roses should soon be pruned pretty closely. Deciduous shrubs, such as Lilacs, Snowballs, Mock Oranges, Spiræas, Deutzias, etc., must be trimmed with care. Ignorant gardeners frequently cut away the wood which should produce the flowers, and we have frequently heard the complaint that some of the above named shrubs have not produced any flowers for a long time; and that the owners were determined to throw them away on that account. When we explained matters to them, and a more sensible mode of treatment was adopted, an abundant season of flowers generally followed.

Dahlias and Gladiolus may be taken up and stored, after exposing the roots to the sun for a day or two, in a dry, airy place. Hyacinths may also be taken up and kept out of the ground for a few weeks, or until the time comes for transplanting. Tulips, Narcissus, Lilies, Pæonies, and Snowdrops should remain in the ground undisturbed, but the earth surrounding them should be spaded or trenched carefully, so as not to injure the bulbs, and they should have a good manuring or top-dressing. Violets, Pinks, and other herbaceous plants should receive some manure, and the soil should be worked carefully around them.

Greenhouses and conservatories must have a thorough overhauling, and care must be taken that the glass roofs are made tight. When artificial heat is not applied during winter it is advisable to water sparingly, and to give a great deal of fresh air. This will prevent too much growth of tender shoots, which are apt to perish during our cloudy and chilly winter days. This is particularly the case with all tender ornamental foliage plants, such as Coleus, Marantas, Begonias, etc.

Very little attention has, so far, been paid here to the proper heating of greenhouses. Although artificial heat is not required for Heliotropes, Geraniums, Camellias, etc., yet it is certain that the more tender warm-house plants, including the very desirable, tender, ornamental foliage plants, must receive artificial heat if they are expected to vegetate luxuriantly. If kept dry and in small pots, most of the so-called warm-house plants may be wintered

without actual loss, yet we frequently hear of total losses of Coleus, Clerodendron, variegated Dracænas, Marantas, and the like. We certainly do not require such formidable heating appliances as are necessary in the East and in Europe, but it is very desirable that this matter should be properly discussed among our professional men as well as amateurs. Flowering bulbs are now in market. To those who are fond of Hyacinths and Narcissus in bloom at Christmas time, we would give a kindly advice to purchase a few bulbs, and to plant them without delay in pots or boxes for the window. They are cheap —every one can afford to have a few; they are of easy culture, and give general satisfaction and pleasure. Wellington of Washington Street, Trumbull of Sansome, E. Meyer of Geary, W. Meyer of Bush, Robertson of California Market, and Miller, Sievers & Co., of Mission and Post Streets, have all good and extensive assortments of all kinds of these bulbs.

A VISIT TO THE FLORISTS.

Among the many beautiful and rare plants which are now found in many of our best floral establishments, among the climbing vines, are *Aristolochia gigas*, one of the most remarkable and curious in its flowers. They are like the ear of an elephant. Their color is equally singular, the ground being cream, interlaced with innumerable minute cross purplish stripes. At a distance these grotesque blooms look like decaying pendulous leaves, of the brownish color of autumn. Some of the species are of a lurid color, and bear resemblance to the expanded mouth of a horn, while others are distinguished by a long pendent pouch. The tender kinds require either the stove or greenhouse, and a few are sufficiently robust to bear out-door exposure in this climate and in England, but not in the eastern portion of the United States. They all grow freely in rich loam and peat. Most of them extend their branches for a long distance, though some are to be found that are neat and compact in their growth. The *A. gigas* is quite new to California. *A. sipho*, *A. Bonblandi*, and *A. sempervirens* are also rare on this coast. Among the Orchids, a group of lovely *Epiphytes*, is *Odontoglossum grande*, probably the best of them. It produces a magnificent and gorgeous flower. These plants, being natives of the Western Hemisphere, do not require a very high temperature, but delight in a moist atmosphere, kept salubrious by the frequent admission of fresh air. *O. Rossii*, *citrosmum*, *Cervantesii*, *pulchellum Insleayi* and *grande*, should be in every collection.

Cypripedium insigne is an old but handsome Orchid, of a curious dwarf species of the terrestrial class; the sepals and petals are broad and expansive, the lip large and helmet-shaped, and the color of the whole green, blotched and striped zebra like, and barred with purple. They are easily grown in rough peat, in a somewhat lower temperature than is necessary for most other plants of the order.

Strelitzia reginæ (Bird of Paradise), nat. ord. *Musaceæ*, is one of the most common of these handsome plants, with large purple-green leaves and singular richly-colored flowers, but most beautiful. It much resembles a bird's brilliantly-colored beak, like the Toucan, but with a crest. Its colors are bright orange and purple. It is usual to grow the species as stove plants, but they succeed almost equally in the greenhouse. This flower was named in honor of old Queen Charlotte

of England, wife of George the Third.

Peristeria elata (Holy Ghost Flower) is too well known to need description. Its likeness to a dove is its wonderful and striking peculiarity.

Among the Abutilons is the *Santana*, not a new variety, but the best of all; foliage large, the flowers are also large and of a deep red, and produced in great abundance. *A. Boule de Neige* is a new and most striking variety; the flowers are of a pure white. These plants grow rapidly in sandy loam and peat.

Among the Fuchsias is the Sunray, one of the most charming and attractive novelties of this class. The foliage is beautifully and richly colored, similar to the leaves of the three colored Geraniums. May Felton and Victor are lovely specimens also.

We noticed of the Begonias, *Begonia Gibsonii*, a double flowering variety recently introduced. All the species of Begonias are interesting and beautiful ornaments of the greenhouse, of the simplest culture in any rich soil if allowed an abundant supply of water. Cuttings may be struck without trouble.

Among the double Geraniums are Asa Gray, light orange salmon; rather scarce at present; odd but fine. E. G. Henderson we much admire, a first-class variety, but old. Triomphe, one of the very best, large, double, fine truss, cherry carmine and rich. Also double-Ivy-leaved Geranium (*G. Koenig Albert*).

Among the Agaves we noticed, besides the fine, well-known, golden-edged or variegated one, another of the same kind—*A. Millerii*.

Also a new German Ivy of great merit has made its appearance among our florists, *Senecio Macroglossum*. Its thick and glossy leaf of a dark metallic green hue is veined with silvery gray; flowers large, golden yellow.

Among the aquatic plants we noticed *Cyperus papyrus* and *C. paperrifera*, and, especially, a new plant which spreads very delicately and prettily on the surface of the water, similar to the European Duckweed. It was found near Fort Point; also a California Water Lily (*Nephar*), color yellowish white.

The public are commencing to show a lively taste for ponds and aquariums, and there are now found among our chief florists no less than twenty-five aquatic plants suitable as accessories to the ornamentation of grounds and rooms. We hope in a short time to see the *Victoria Regia*—the largest Water Lily in the world—a native of the river Amazon, grown here successfully in a suitable tank. One floral firm has already made the attempt, but the seeds were found defective. More, however, have been ordered.

A PLEA FOR FERNS AND MOSSES.

Ferns and their allies have long been a favorite class of plants with us. True, you will say they are destitute of conspicuous and showy flowers, which give so much beauty and interest to a garden or conservatory. But then their exceedingly graceful habit and delicate green-colored foliage amply compensate for this apparent loss; for it is not a real one, many of the Fern tribe having fructifications of, to say nothing else, great curiosity. What a grand effect has a complete collection of these interesting plants, from the most gigantic Tree Fern of Australia to the most puny Lycopod! And here we can not resist commending the collection of a large variety of these lovely specimens of a peculiar portion of the vegetable kingdom in the Fern house at Woodward's Gardens, and also conspicuous in many parts of his handsome and now

well-filled conservatories; also, the extensive displays of the same graceful family of plants in the large exotic houses of Miller, Sievers & Co., opposite the above Gardens, which are well worth visiting, together with their ponds of aquatic plants.

Like all other natural families of plants, Ferns, to be managed to perfection, require a house to themselves, or nearly so, say a span-roofed house, with a glass division—the one for tropical, and the other for temperate. This arrangement is judiciously made at Woodward's and Miller & Co.'s. To be seen to the best advantage, a mass of artificial rock-work is seen at both these places, in the place of a stage, with here a pool of water, there a sparkling jet or fountain, with the drooping Ferns and Lycopods hanging over the edges. Among these rocks are inserted promiscuously, and without seeming intention, large distorted, gnarly, half-decayed tree-stumps; and into the cavities of these, a host of the most choice and beautiful find a congenial home. The Elk's-horn Fern (*Acrostichum alcicorne*) here looks charmingly, clasping the old stumps and jagged rocks, and sending up its singularly shaped fronds. The lovely Hare's-foot Fern (*Davalia canariensis*) extends its hare's-foot-like creeping rhizoma, and forms a striking contrast, besides many others from all parts of the world. *Lycopodiaceæ* form the carpet or undergrowth of these interesting and most attractive Ferneries. *L. denticulatum*, *L. cœsium* are both admirably adapted for this purpose, with some others. In the tropical departments, the striking *L. c. arboreum*, towering to the tops of the houses, with its blue tint and moss-like appearance, has a most pleasing effect. As Ferns and Mosses, almost without exception, love shade, there are planted here and there large single stemmed plants of rare size and shape. The contrast is most agreeable, and in perfect harmony. These are evidently selected for their natural spreading head. There are a variety of plants here seen that associate well with these, especially those grown for their curiosity, rather than flowers.

To descend from these houses to everyday affairs. There is plenty of room in these hot-houses or greenhouses for a portion of these. If you have a naked piece of soil under the stage, or around the paths, what looks nicer than to have it covered with *Lycopodium denticulatum* and *cœsium*—in green or hot-house they will grow alike. If a few hanging baskets are suspended from the rafters of your house, as in Woodward's and the Exotic Gardens opposite—and everyone should have a few—it may have in it a choice Orchid, *Hoya Bella*, or other plant. This is just the thing that is wanted. Place in a few pieces of the Moss, and it will soon spread over the whole, forming a living green basket; while it acts, at the same time, as a never-failing hygrometer, indicating when water is wanting, besides preventing undue evaporation.

For green for the bouquet, too, many are exceedingly useful. We see them now much used in this manner. Take the wedge-leaved Maiden-hair (*Adiantum acuneatum*), or the true Maiden-hair (*A. capillus veneris*), for instance: search the whole vegetable kingdom, you can hardly find more delicately beautiful material for the purpose, especially for the outside of small table bouquets. They have the additional good quality of being always in season; in fact, they are just the thing that every collection of plants should have some specimens of. We should be

sorry to be without the following: *Lycopedium denticulatum, cœsium, c. arboreum, depressum, stoloniferum, Wildenovii*, and *umbrosum*, and *Adiantum acuneatum*, even for utility's sake.

One feature in connection with the tribe is, that they are easily grown. The roots of Ferns are very small, and should have an open porous material to permeate in, and abundant white sand added to the soil to keep it so; pieces of broken pot and charcoal should be mixed with the soil for the same purpose. In potting, plants will be found to do better if the crown of the plant is raised an inch or so above the top of the pot. When growing, most of them are fond of plenty of water, especially sprinkled over the fronds. Some sorts continue throwing up young fronds throughout the year; others are periodical in this respect, and require a season of rest; that is, partial suspension of watering. The *Acrostichum alcicorne* and *stemaria* will readily cling and grow to a flat piece of board, if held to it at first by a piece of wire; in the stove this is a curious way to grow them. In fact, a variety of ways may be devised, in which these plants may be made to add beauty to the green or hot-house. For soil, an equal mixture of very fibry loam and peat will be found suitable, if they can be procured here, or something as near to them as possible, with the additions recommended above. But perhaps we have said enough on this (to many) not so interesting a subject as the more immediate and more popular so called blooming plants.

Californians are talking of opium-poppy culture in the State, and thereby supply the Chinese population with the home-grown article. We think our energies might be better directed.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

There is scarcely an article of vegetable food more widely useful and more universally liked than the Apple. Why every farmer has not an Apple orchard where the trees will grow at all is one of the mysteries. Let every family, in autumn, lay in from two to ten, or more barrels of this wholesome fruit, and it will be to them the most economical investment in the whole range of culinaries. A raw mellow Apple is digested in an hour and a half, while boiled Cabbage requires five hours. The most healthful dessert which can be placed on the table is a baked Apple. If taken freely at breakfast, with coarse or brown bread and butter, without meat or flesh of any kind, it has an admirable effect on the general system, often removing constipation, correcting acidities, and cooling off febrile conditions more effectually than the most approved medicines. If families could only be induced to substitute the Apple—sound, ripe and luscious—for the pies, cakes, candies, and other sweetmeats with which their children are too often indiscreetly stuffed, there would be a diminution of doctors' bills, sufficient, in a single year, to lay in a stock of this delicious fruit for a whole season's use.

But few people seem to know, too, the value of small fruits to a family when grown in their own gardens. You commence with Strawberries; they continue in California, if irrigated, for eight months in successive crops. You pick perhaps six to twelve quarts a day. You have them on your table as a dessert, if you please, at noon, and your tea-table is loaded with them in the evening, and you want little else but your bread and butter. Your family con-

sume in one way or another about eight quarts a day, and while they last no medicines for bodily ailments are required, as a quart of Strawberries daily will generally dispel all ordinary diseases not settled permanently in the system. After Strawberries, Raspberries come to continue about five weeks; then we have Blackberries, where the climate, as in this State, is not too cold for the cultivated and tender varieties; then the Currants ripen, which remain with us till the early Grapes mature; and taking the season through, any family with a half acre of land in a garden can grow small fruits that make country life delightful, and at the same time hundreds of dollars can be saved in the supply of the table, as the writer knows from forty years' experience.

There would seem to be no good reason why, if we wish to raise good orchard fruits we should not manure our trees. People often look at trees growing on rocky hillsides, and argue therefrom that trees can grow without manure. They know that Potatoes and other vegetables must have manure or they will not thrive, but they regard trees as a different order of vegetation, something that can thrive and flourish where nothing else would. But, in the case of trees on rocky hill-sides, the land is often anything but poor. The rocks themselves frequently contain valuable mineral matter, which, as the rock decays, is presented in a form that plants can feed upon. Then, whatever vegetation grows among the rocks remains there to decay, and even leaves and other foreign substances that blow into the crevices formed by the rocks make a valuable plant food, on which the tree thrives. Indeed, trees in apparently poor rocky places, are really much better off than many trees in orchards, where they are in what appears good land. In more level land trees must be manured. In many cases it is as necessary to the best success that trees have an occasional manuring as it is that any crop should have manure. There have been many discussions as to whether manure for fruit-trees should be applied broadcast or plowed in. For orchard trees there is no rule; it depends on circumstances. If the trees are on ground where vegetables are grown, the manure is, of course, turned in for the benefit of these crops, and the roots of the fruit-trees fight with those of the vegetables for some of it, and get it, too. But there are many orchards where no crops are grown but the trees, and then it is an excellent practice to apply manure as a top-dressing at least every other year, if you would have them bear an abundance of good fruit.

On or about the 20th of last month there was no change worthy of mention in the fruit or vegetable markets. Raspberries of the second crop were received almost daily from San Jose, and retailed readily at 40c. per lb. Strawberries of good quality were coming in quite plentifully, and for the lateness of the season were not high in price, being somewhat cheaper than Raspberries, viz., 15c. per lb.

In the fruit market about the last of October there had been no material changes for two weeks, but vegetables of some varieties showed an upward tendency. Apples were steady at 75c. to $1.50, and Pears $1 to $2.50 per box. Potatoes by the single sack, $1.25 to $1.75 per 100 lbs. The principal varieties of Grapes retailed as follows: Chasselas and Mission, 5c. to 6c.; Black Hamburg, Rose of Peru, and Black Malvoisie, 6c. to 8c.; Muscat of Alexandria, 8c. to 10c.; White and Flame Tokay, 8c. to 10c.; Black Morocco, 10c.

to 12½c.; Purple Damascus and Olivita, 15c. per lb. With these and other Grapes the market was most liberally supplied, and is likely to be so for some time. The first lot of Los Angeles Lemons by the Southern Pacific Railroad had come to hand. "The Sweet Potato market was fearfully demoralized, selling at 50c. per sack, or less than ½c. per lb." So says that good authority, the *Commercial Herald*. Strawberries were 15c. per lb.; Figs, 4c. to 6c. per lb.; Bananas, $2 to $3 per bunch; Cantaleups, 25c. to 75c. per dozen; Cocoanuts, $7 to $8 per 100.

Editorial Gleanings.

Where Boxwood Comes From.—Not every one is aware that the wood used by engravers is the growth of those far away regions around the Black and Caspian Seas, the very names of the ports from which it is shipped being unfamiliar. Very few who consider themselves good geographers have ever heard of Poti, Abkassia, or Tzartsin, and yet these are flourishing commercial towns, reached by way of the Golden Horn of Constantinople. For all fine engraving Turkey Boxwood is used, and as its quality varies much some skill is necessary to a good selection. The best is of a delicate yellow color, clear and free from spots; it cuts smoothly and evenly, with no crumbling or tearing, but every line cut will be perfect. It is to the use of this wood by our artists that the superiority of their designs and wood engravings must in a great measure be attributed. In consequence of its scarcity and high price many substitutes have been resorted to: Maple, Apple, Pear, Mahogany, have been experimented upon; but hitherto no wood, metal, or composition has been discovered that possesses the requisite qualities. In addition to engraving, Boxwood is used for scales, rules, gauging rods, and similar articles of which figuring is made; and there are factories in Connecticut that consume hundreds of tons annually for this purpose alone. Any one that has ever held a carpenter's rule in his hand knows what Boxwood is like. It differs in color from all other woods, and it is somewhat remarkable that it comes to perfection only in a comparatively limited region of country in the vicinity of the Black Sea. It weighs about seventy-five pounds to the cubic foot, and varies in price to land it in Boston from $75 to $350 a ton.

Gram.—This useful article of food, large quantities of which are used in India, is the product of the common chick pea, or Bengal gram, a hardy annual, herbaceous plant of the leguminous family. It is found wild in the south of Europe, and in Africa and the west of Asia. It is much cultivated in Spain, and there used as a leguminous esculent. It grows about a foot high, branches much, and the leaves are pinnated. The flowers grow singly on slender stalks, and are of a bluish purple color. They are succeeded by oblong hairy pods, usually containing two seed. The mode of cultivation is similar to that of other leguminous plants. The drill method is preferable, on account of the greater facility for the eradication of weeds. Strong clayey land produces the best crop, and a calcareous soil is well suited to it. The pulse somewhat resembles the white pea, but is larger and more irregularly shaped. In the East it is largely used as an article of nutritious food, in curries, cakes, etc., and is well adapted for fattening cattle and horses. Dr. Christie mentions that an acid (oxalic) exudes from

all parts of the plant, which is collected by the ryots and used in their curries instead of vinegar. This plant is also employed by the natives as a refrigerant in fevers, and for other medicinal purposes. A small quantity is imported into England, it is thought for the purpose of adulterating coffee. In the south of Europe the seeds are much employed in French cookery under the name of "gravance," and when gathered ripe they form the basis of the well known French soup, "purée aux croutons."

The Gardener's Life.—Alcott, in his "Tablets," remarks: "Thus we associate gardens and orchards with the perfect condition of mankind. Gardeners ourselves by birthright, we also mythologize and plant our Edens in the midst of us, like our ancestors; the sacredness of earth and heaven still clinging to the tiller of the ground. Him we esteem the pattern man, the most favored of any. His labors have a charming innocence. They yield the gains of a self-respect denied to other callings. His is an occupation friendly to every virtue; the freest of any from covetousness and debasing cares. It is full of honest profits, manly labors, and brings and administers all necessaries; gives the largest leisure for study and recreation, while it answers most tenderly the hospitalities of friendship and the claims of home. The delight of children, the pastime of women, the privilege of the poor man as it is the ornament of the gentleman, the praise of the scholar, the security of the citizen, it places man in his truest relations to the world in which he lives. And he who is insensible to these pleasures, must lack some chord in the harp of humanity, worshiping, if he worship, at some strange shrine.

Lime-juice as an article of commerce should be one of the products of our Queensland orchards. The Lime-tree grows well, and bears abundantly, in this country. They are not nearly so troublesome as Orange-trees in their cultivation. Pruning, except so far as removing dead branches is concerned, is not required. It will thrive in poor soils, although a rich soil is more congenial to it. The Lime-juice is prepared in the most simple manner. The *Planters' Gazette* gives the following as the sum total of the labor required: "The fruits are submitted to the pressure of a mill of no great power, and boiling down the resulting juice—which may be kept a great length of time without deteriorating — to the required density, and putting it into casks for exportation. The density, which has been found most satisfactory in Dominica, is reached by boiling down to one-eighth its original volume. In Jamaica, Lime-juice has been of late years concentrated and shipped to America, to be used in fixing certain dyes. The exports in 1874 amounted to 107,558 gallons, of the value of £5,378."—*Queenslander.*

[Some portions of California are very similar in climate to Australia.—Ed.]

Striking Rose Cuttings in Sand.—You want a deep saucer, or soup plate, that will hold an inch depth of sand; then make cuttings, with one or more buds, from an inch to two inches long, and stick them in the damp sand; if they are so close as to touch each other all the better. Sprinkle on water from a watering pot until the sand is as wet as mud, and set the whole in a window, where it will have plenty of sun. Cuttings of plants with soft stems, like Verbenas, Heliotropes, and Fuchsias, should be put in when very young and

tender. Plants root very quickly in this way, if you do not forget to keep the sand wet all the time. If it once dries up you will have to begin over again. At the end of a week a cutting of each kind may be taken out to see how it is doing. When they show a thread of a root, they must be set out in good soil. Some will take root in a week or ten days, and others will take two or three weeks. But don't forget to keep the sand very wet all the time.

Strawberries as a Border.—The *Valley Farmer* says that it affords a happy combination of beauty, utility, and convenience to border the garden walks with Strawberries. A single row of plants, set one foot from the edge of the walk, will, if properly cared for, give a close border two feet wide the second year. Draw a line on each side after the runners begin to root, cut the edges straight and keep them so. You thus not only economize space which might not otherwise be used, and make the garden attractive, but get your fruit where it can be picked from the walks, which, if properly made of coal ashes or gravel, will always be dry, and very convenient to use a stool in. Two walks thus bordered through the centre of even a small garden, each way, will give a family a good supply of this most delicious of fruits. [This mode is especially adapted to the borders of a kitchen garden.—Ed.]

Flowers. — Among all the pleasant things of life — and the all-bountiful hand of Providence has scattered the path of our days with innumerable pleasant things, if man would but enjoy them — among all the pleasant things of life, there are few more pleasant than a walk in the flower-garden before breakfast on a sunshiny morning. To see those mute and still, though not motionless, creatures—we mean the blossoms — opening their painted bosoms to the beneficent rays which give them their color and their loveliness, welcoming the calm blessings of the light, as if with gratitude, and seeking, in their tranquil state of being, for nothing but the good gifts of God, might well afford a monitory lesson; for everything in nature has its homily, to us, the eager hunters after fictitious enjoyment. How calm do they stand in their loveliness, how placid in their limited fruition of the elements that nourish them—how, in their splendid raiment, do they sparkle in the sun, how do they drink up the cup of dew, and gratefully give back honey and perfume in return.—*Eliza Cook's Journal.*

Striking Cuttings—Easy Mode.—The *Rural New Yorker* gives in substance the following method, which has been found remarkably easy: "Take a flower-pot about eight inches in diameter, invert a saucer within it large enough to rest against the sides half way down, or lower, which is better than using broken crocks or stones. This drainage is necessary where there is no bottom heat. Then fill to the brim with very coarse sifted sand. Place the pot in a strong light, and saturate the sand a few hours with water, providing a proper vessel for drainage. Make the cuttings from two to five inches long, retaining more leaves in autumn than earlier, but stripping them off nearly to the top, and insert them half an inch in depth, about twenty to the pot. New buds in time will show that roots are formed, when they are to be lifted out with a teaspoon, and set in small pots of rich sandy soil, avoiding clayey soil, which will become too hard. If too

many leaves are left on the cutting, they will be likely to droop. September is a good time for this work."

Stir the Soil.—"If I had to preach a sermon on horticulture," says Downing, "I should take this for my text: 'Stir the soil.'" In dry weather it is very essential that the soil should be stirred often. The air waters the fresh dug soil much more effectually than we can do. A man will raise more moisture with a spade and a hoe in a day than he can pour on the earth out of a watering-pot in a week. If the ground is suffered to become close and compact, the cool surface exposed to the air for the reception of moisture is too small, and what is deposited does not enter into the earth far enough to be appropriated; but if the soil be loose and porous the air enters more deeply and deposits its moisture beneath the surface. Almost any soil in which a seed will germinate, may be made by continued hoeing to produce a crop. Above all, cut away every weed that appears. "One year's seeding makes seven years' weeding." The only use of weeds is to make a necessity of tilling the soil more frequently.—*Ferry's Catalogue.*

Tamarinds.—Of all the ornamental trees propagated among us, either native or foreign, there is none, in my judgment, more desirable than the Tamarind. Its growth is rapid; its form symmetrical; its foliage beautifully delicate, and altogether it is highly ornamental. Besides, it is perfectly free from blight as well as from the depredations of insects. If cultivated on our Southern plains, it would doubtless form a valuable acquisition. The seed may be sown in drills about four inches apart, and covered from two to three inches deep, with light rich soil. When grown to a height of three or four feet, the young trees may be transplanted to the sites where they are permanently to remain.

European horticulturists have recently adopted a mode of making Rose cuttings root more certainly, by bending the shoots and inserting both ends into the ground, leaving a single bud uncovered at the middle and on the surface of the ground. The cuttings are about ten inches long, and are bent over a stick laid flat on the ground, holes being dug on each side of the stick for the reception of the ends of the shoots. The roots form only at the lower end of the shoots, but the other end being buried prevents evaporation and drying up.

METEOROLOGICAL RECORD,

For the Month ending October 31, 1876.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 18 Market Street.)

BAROMETER.

Mean height at 9 A. M.	30.09 in.
do 12 M.	30.09
do 3 P. M.	30.09
do 6 P. M.	30.08
Highest point on the 29th at 3 P. M.	30.24
Lowest point on the 27th at 6 P. M.	29.90

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	61°
do 12 M.	66°
do 3 P. M.	66°
do 6 P. M.	60°
Highest point on the 23d at 3 P. M.	74°
Lowest point on the 31st at 6 P. M.	54°

SELF-REGISTERING THERMOMETER.

Mean height during the night	50°
Highest point at sunrise on the 9th	54°
Lowest point at sunrise on the 6th	43°

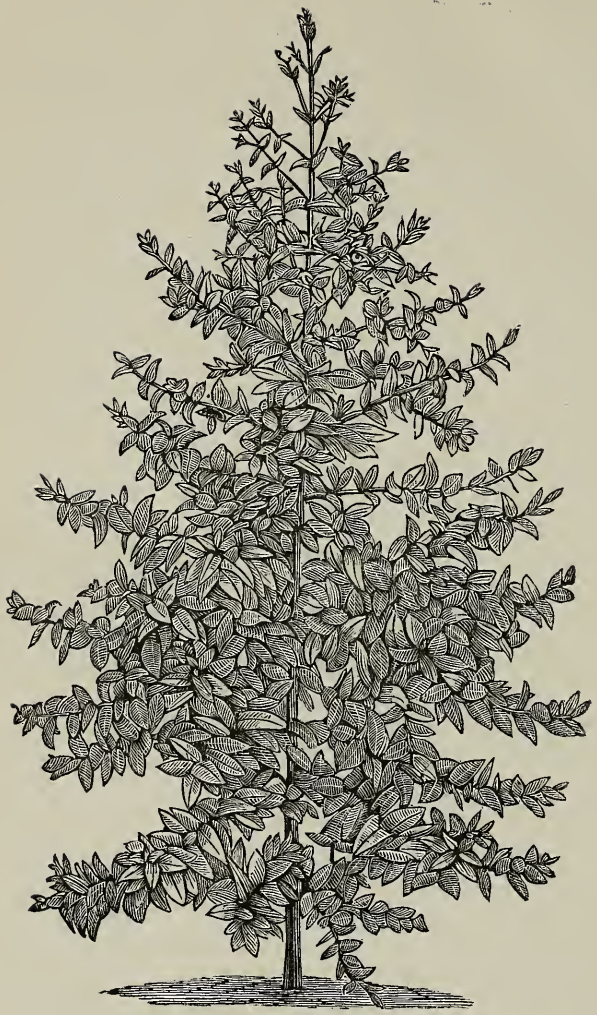
WINDS.

North and north-west on 3 days; south and south-west on 11 days; west on 17 days.

WEATHER.

Clear all day 8 days; cloudy all day 10 days; variable on 13 days; rain on 7 days.

RAIN GAUGE.	Inches.
16th	0.43
17th	0.51
18th	0.20
25th	0.04
26th	0.12
27th	1.19
28th	0.20
Total	2.69
Previously reported	0.29
Total up to date	2.98



EUCALYPTUS GLOBULUS.

(Australian Blue Gum.)

THE

California Horticulturist

AND FLORAL MAGAZINE.

VOL. VI. SAN FRANCISCO, DECEMBER, 1876. No. 12.

FOSSIL BOTANY.

BY GEOLOGIST.

The progress of geology has developed the elements of what may be considered a rather recent science—that of fossil botany. The subject is highly curious to any inquiring mind. Who can read accounts, or examine the remains of vegetation, sometimes of colossal proportions, differing entirely in appearance, and in some respects in structure, from any now growing on the earth, without a desire to learn more concerning them. Some of the antediluvian plants were highly curious in their form and structure, and must have been remarkably beautiful in their appearance. Others were similar to species now growing, or recent species—so called by the botanist to distinguish them from those which no longer grow, termed extinct species. The Ferns compose the most numerous family of vegetation found as organic remains, some of which closely resemble recent species, though none have been found which can be considered as more than types of those now existing. The argillaceous nodules, or balls of clay, found in some of the English coal mines—the great depositories of fossil plants—often exhibit very perfect impressions or casts of these Ferns. In most instances they appear to have been produced in tropical climates. This is inferred from the fact, that in hot countries their nearest living analogies are to be found, though, as we have before stated, identical recent species have not been discovered. When these nodules are carefully broken, the impressions are seen preserved on both faces of the clay, but, contrary to expectations, not displaying each side of the leaf or stem, but the same side on each broken surface; on the one in *alto*, and on the other in *basso relievo*, or slightly depressed on one side, and slightly raised on the other. The best explanation of this curious circumstance which long puzzled observers, appears to be the following: The vegetable matter, in passing through its bituminous change, first became softened, and filled its own mould between the walls of clay with the liquid or deliquescent substance thus produced; this subsequently became hardened, and adhered to one side of the clay, which, on being broken, shows the surface of the adherent

bituminous cast, while the other displays the corresponding mould.

It is well known to geologists that nearly all the plants, particularly those of the cryptogamous tribes, as the Ferns and Algæ, or seaweed, now found in geological formations in all parts of the earth, indicate by their increased proportions, the influence of tropical regions. Moisture and heat appear to be the conditions of the largest development of these plants. Thus, the Ferns, as the brake (*Pteris*), or polypody (*Polypodium*), grow in our climate only from four to six feet in height, nor have we any individual of this tribe in this country which attains more than twice that stature. But in the hottest countries, as in tropical America and in the East Indies, the arborescent or Tree Ferns, though belonging to the same family as our own, attain the altitude of forest trees, with stems of eight or ten inches in diameter. On the stairs of the British Museum, London, there is an arborescent Fern which came from Bengal, measuring forty-five feet in height. In the ardent climate of South America, Baron Humboldt, to his astonishment, saw immense groves of a similar colossal growth, and it may well be supposed that nothing in the vegetable world can present to the eye of the traveler a more beautiful, interesting, and imposing scene. At our late Mechanics' Exhibition here we observed some fine specimens of Tree Ferns, and they are still at one of our florist's establishments in this city.

In the fossil state in cold climates, similar Ferns, as have been mentioned, are found at the present day. They are abundant in the coal mines of England, France, and Germany; and in this country near the Canada line, as well as in Siberia, similar phenomena occur. Now, it might be supposed, referring to the general deluge for an explanation, that transportation of these plants by water, from their native country to the place where they are found, would readily account for these facts; but the plausibility of this theory is at once swept away by another fact, which is this: These Ferns are sometimes found standing in the identical spots where they grew, their roots still inserted into the earth, as in their lifetime, but equally with their stems and leaves petrified into stone. The only consistent solution of the difficulty appears to be in the theory, that the temperature of the earth was once much higher than it now is, and that the climate of the region in which these fossil remains are now discovered, was of the same nature with that in which their analogical recent brethren are now produced—a theory the truth of which, at present, we shall neither affirm nor deny, and for a discussion of which this is not the place. Although allusion has been made in the foregoing remarks to the Ferns only, yet there are several other families of plants to which the same circumstances are equally applicable. Among these are the Equisetums, a tribe well known. A little straight species, of the size of a pipe-stem, is known by the name of Scouring Rush, and from the quantity of silicious matter in its outer covering is sometimes made serviceable in polishing metal. To this family belongs the Calamite, which is now only found in a fossil state, and which once attained the magnitude of a forest tree. Specimens of the same species occur in the coal formations at Newcastle, England, at Lubec, near Canada, and at Dunnville, Canada (found by the writer), in France, and in Siberia, showing the wide extent over which this plant was spread, at a time when heat and moisture seem

to have pervaded the whole earth, and to have given to this family, like the Ferns, a gigantic size, while in this climate no recent species become more than three or four feet high, with diameters seldom attaining an inch.

THE STOCK (*MATHIOLA*).

Few plants are better known than the species and varieties included under the general name of Stocks and Stock-gilliflowers. The genus is named from Peter Andrew Mathioli, an Italian botanist. The plants belonging to it are generally covered with a white, soft down, and are among the most popular of garden flowers. There are an immense number of varieties, both single and double, of the above species. Some of the single ones are white, some purple, some crimson, some spotted, and others striped.

This is a plant growing from one to two feet high, with an erect branching stem, hoary leaves, and long spikes of flowers, the size and richness of color of which differ greatly in the several varieties, some of them being very splendid. The species is a native of the south of Europe, by the sea shore, whence it was introduced in 1731; but the principal varieties have been originated in England and Germany. The German varieties are particularly beautiful, and the seed saved in that country and in California, from the greater heat of the summers compared with England, is very superior. Home-saved seed can hardly be depended on, as where several varieties are cultivated together, spurious ones are made by the wind carrying the pollen from one plant to another, and the seed can never be kept true. Regular seed growers preserve only the plants with the best flowers, and throw the others away. To produce the finest flowers, the seed should be sown here in the spring or summer, in a bed of rather light soil, which should be covered with a frame; or the seed may be sown in pots, four or five in a pot, and placed in a cold frame, or in a greenhouse without artificial heat. A cold frame is a pit or frame covered with glass, but not heated by manure, or in any other manner. The plants when they come up should be kept dry during the fall and summer months to strengthen them, and late in the winter or early in the spring they should be taken out of their beds, with a ball of earth around their roots, or if in a pot, turned out with the earth entire, and planted in a tolerably warm border in very rich garden soil. The poorer soil in which they were raised will have previously checked their growth; but planting them in the rich soil after this previous check will make them grow luxuriantly, and produce rich spikes of flowers early in the summer.

Those persons who wish to have fine Stocks to flower early in the summer or late in the spring, but who have no frame to raise them in, or indeed, like most of our city dwellers, do not like the trouble of keeping plants during the winter in their window conservatories or their greenhouses, will find it the best plan to purchase young plants in May or June, and to plant them in rich soil. These autumn sown plants have, however, the disadvantage of fading very soon, when exposed to the heat of summer in the interior, though in San Francisco this is not often complained of. In too warm locations in the California valleys their fibrous roots wither, their purple or crimson colors becoming blotched or blemished by the sun. From this disadvantage spring-sown plants are generally free. If

sown in February, March, or April, in rather dry poor soil, they may be transplanted in April or May, taking care to preserve the earth about the roots, and not to injure the fibres, though in some cases the extreme point of the top-root may be taken off, to induce it to throw out more fibres. Other seeds may be sown later, which will not need transplanting, and which will continue flowering for a long time. Some persons, to produce large flowers, take off the side-shoots as they appear, and thin the blossom buds on the flower spike, by taking off every alternate bud; and others water with liquid manure, and use other means to produce fine plants. In whatever manner they are treated, it must always be remembered that they require great care in transplanting, and that this should be done when they are quite young. The general rule is, that they are fit for transplanting when they have opened their second pair of leaves, and that it should not be delayed longer than a little after the third pair is produced. When large plants are removed, it should always be with such a ball of earth attached that the roots may experience no check from the removal. When the Stocks are planted out in the borders for flowering, they are generally placed three together in an angular form, so as to allow room for a stake to be placed in the centre to tie them to, if necessary.

INSECT RAVAGES.

Cultured, scientific, potential man, "lord of the creation," master of the world, is so frequently rendered absolutely powerless by apparently insignificant causes, that he becomes almost an object of ridicule. Great and wondrous, in many respects, as have been his achievements in the various fields of science, he, nevertheless, finds himself utterly helpless and incapable of contending successfully against the aggressions of certain insect hosts that prey upon his possessions, and feed upon the "sweat of his brow," with as much impunity as if they were the rightful lords of the manor. What resource of man, what amount of effort on his part, ever snatched his bread from the voracious jaws of the myriad of locusts that have from time to time ruined and devastated certain countries? When or where has he discovered any sufficient check to the grasshopper legions that in a very short time convert a blooming, fruitful country into a howling wilderness? What means has he ever devised to trace and prevent the ravages of the wood ant, which devours houses, furniture, and all sorts of woods, honeycombing them in the most thorough manner, and leaving nothing but the shell? What measure of assured success has he achieved in stopping the devastations of the potato-bug and others of that class? References to Holy Writ will show that, in the majority of cases, the insect and reptile tribes were employed by the Supreme Being to punish entire nations, and bring them to a sense of their nothingness. And now comes a new and terrible scourge in the shape of an unsightly louse, which consumes the sap of the vine, and is destroying incredible amounts of property that has been slowly amassed by the patient labor and industry of the lords of creation.

Intelligence of an alarming character has been received from many districts in France, and other portions of wine-producing Europe, in reference to the terrible inroads of the Phylloxera. The Bordeaux Chamber of Commerce has been diligently collecting a mass of information on this subject, and in their

report they say, that the entire wine interests of France are seriously threatened by this apparently ineradicable pest. Their work of destruction has been carried to such an extent in the Department of the Gironde that the value of lands has been reduced one-half, and the wine crop will not exceed the tenth part of what they would otherwise have the right to expect. The French Government, several years ago, offered a reward of 300,000 francs for a remedy or preventive against this great evil, but up to the present date no satisfactory progress has been made in any quarter toward insuring relief. Piqued by the seemingly insignificant nature of the foe, animated by the ambition to confer a great benefit and achieve a great reputation, and stimulated by the hope of reward, hosts of scientific men, eminent chemists, skilled naturalists, and learned societies have exhausted their efforts, and acknowledge themselves baffled.

The Phylloxera has not only made its appearance in California, but in several sections of the State, notably in Sonoma, has already committed grave depredations. Our viticulturists are painfully exercised with apprehensions for the future, and, if we judge by the injury done in other countries, not without good cause. There is a grand niche in the Temple of Fame, a high place upon the Roll of Honor—wealth, rank, and glory—for the man who can successfully combat and defeat the Phylloxera.

LEAF CURL IN PEACH TREES.

Every year in California we observe in many parts of the country, especially where the trees are exposed to cold and violent winds, this defect to the eye and doubtless some injury to the fruit, in the Peach. In this climate very cold and uncomfortable days in early spring, weather in which an overcoat is a necessary appendage to one's bodily well being, with winds from the north or northwest, driving clouds and fog from the ocean, with the chilly air charged with mist from northern icy climes, are the causes, we think, of this deleterious and unsightly malady. Then, if indications of the blight do not commence on the Peach blossoms, the rough handling of the winds and cool moisture, often bode unfavorable omens to the coming crop.

Generally after the young Peaches begin to show themselves, and the weather becomes mild and warm, and the storms of the north winds abate, the curl of the Peach leaf commences, and progresses rapidly until nearly every one existing upon the trees during the gales become completely crimpled. We have often examined the curled leaves, and could never discern any indication of animal life in any form among them. Sometimes when the calamity is very severe, but this seldom happens here on our slope, the leaves gradually drop from the trees, and nearly all fall off; but we have observed that new shoots speedily burst forth, and appear green and healthy. There may possibly be different causes for the curl in the Peach leaf, but we feel confident that the cold north and north-westerly winds in the months of March or April produce the blight on the leaf, followed by the curl. The violent and long-continued cold winds cause stagnation in the minute sap-vessels of the leaves, which produces premature decay and curling, and occasionally falling off, as in autumn.

The bodies and leaves of trees have their sap-vessels for the same purpose that animals have their blood-vessels; whatever takes place to the injury of

either, in such manner as to destroy the circulation, will produce disease or mortification of the affected part as well in trees as in animals. The work of mischief above described comes too suddenly to be the effects of insects, and it is at a season that is unfavorable to their propagation and operations. It can not be caused by the effects of our temperate winters on the trees in this State, for our winters are always favorable, and we have seen young seedling Peaches seriously affected in the leaves, while every part of the tree, both root and branch, were perfectly sound.

As there has been considerable discussion upon the Peach leaf curl by our writers upon the subject of fruit trees, we have thought it possible that some light might be shed by the above remarks, which are carefully made from extended observation.

LOVE OF PLANTS AND FLOWERS IN OUR MIDST.

It does not require much close observation to perceive that fine, highly, and elaborately ornamented houses—indeed, in some instances, rather too much of the ginger-bread order of decoration—are more frequent in San Francisco than well and neatly kept gardens, although climate has favored us more in its mildness and geniality than most of the other cities of our Union. The embellishments of our dwellings are effected by artificers only, but the garden requires more skill and love for it in the owner (even if he employs a first-rate gardener) than is generally seen—few gardens being found well furnished and tended, unless in the hands of a florist or proprietor who really loves his floral companions. The love of such a master will keep alive each tender plant his money, care, and taste have collected; for never was any art or excellence liked by the careless or ignorant; it is knowledge that creates affection, and affection increases knowledge. Love has been the inventor, and is still the maintainer of every noble science. It is chiefly that which has made our trees and flowers to flourish in the street where we dwell, and has chiefly been the means of the knowledge, however comparatively limited, we now have in plants and planting; for it is almost impossible for any man to have any pretty fair collection of noble and beautiful plants to prosper, unless he loves them; for neither the excellence of the soil, nor the advantages of the situation or climate, will do it without the master's affection; it is that which animates and renders them strong and vigorous; without which they will languish and decay through neglect, and soon cease to be of service or pleasure to him.

We see many gardens of tolerably good model and laying out (and some of our public gardens, also, the Post-office lot included), in the hands of unskillful persons, some of them with good walks, fences, and grass plots, but in the most essential adornments so deficient, that a green meadow is a more delightful object; there Nature alone, without the aid of art, spreads her verdure carpets, spontaneously embroidered with many pretty plants and pleasing flowers, far more inviting than such immured nothings to which we have alluded. And, as noble fountains, grottoes, statuary, etc., under proper conditions are excellent ornaments and marks of magnificence, so all such poor and deformed attempts in gardens or squares, ill done, are little better than blocks in the way to interrupt sight, but not at all to satisfy the eye or the understanding. A choice collection of

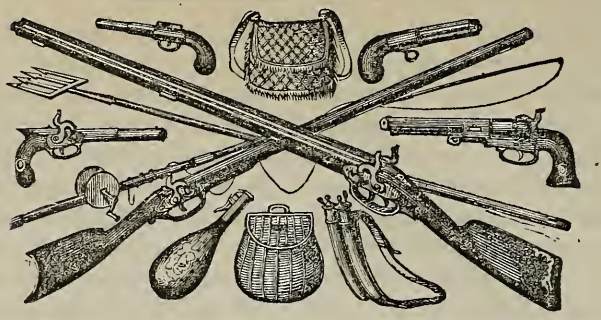
living beauties — rare plants on the lawn, flowers well arranged in beds, and shrubs, well and tastefully disposed and kept—are indeed the wealth, glory, and delight of a garden or park, and the most absolute indication of the owner's or manager's ingenuity, whose skill and care are chiefly required in their choice, culture, and position; but to complete all, and for everything to look well, and clean, and neat, there must be, and remain at the foundation of all, the love and affection of the proprietor, or hired gardener, but chiefly in the proprietor for his floral *protegees*, which require incessant attention, care, and solicitude in order to continue to prosper and look well.

JAPANESE GARDENS.

Among the conifers will be noted young plants of that Japanese species which may be seen under the wing of the Japanese building—quaint pigmies of trees, not three feet high, yet over seventy years old. They are gnarled and twisted as if they had fought the winds and caught their picturesqueness of form—as old Oaks catch theirs—by battling with tempests and wintry storms upon the hills. And yet these dwarfed trees are thoroughly creatures of art. By examining closely the specimens in the Japanese ground, you will see traces of the dwarfing process. The leading shoots have been clipped, or bent downward; the lateral branches turned in and tied back; lusty limbs twisted and wrenched into quaint postures; marks of the torturing-pins and bands and cuts are still observable; it is a crippled dwarf of a tree, made quaint and picturesque by its years of struggle against the toils of the gardener.

Is there a compensating beauty in them? Not, surely, as we reckon the beauty of plant growth. But consider, that the Japanese, in their horticultural system, have offices for such dwarfed monarchs of trees to fill. With them, no homestead is complete without its garden; a few square rods may be all at command; but this area must have its golden treatment; and the gardens are modeled after nature. *San-sui*—mountain and water—is the term which in Japanese describes the gardeners' work. The aim is—within, however, a limited area—to present a complete landscape, with rock, valley, plain, water, and mountain. Under such miniature presentment, trees and plants must be dwarfed to bear proper relations to the dwarfed valleys and rocks. To such an extent is this copying of nature in little carried by enthusiastic gardeners that a rocky landscape, with its heights and level spaces and trees, is wrought out, with nice attention to proportions, within the limits of a great bronze basin. We doubt if gardeners of the West will emulate them in their mimicry of nature; but they may well emulate the painstaking skill which makes such small successes possible, and the assiduous care, and the close study of plant-life, which are enforced by such arts.—*Scribner's Magazine.*

THE BLUE GUM IN IRELAND. — The Australian *Eucalyptus globulus* promises to be profitable timber in the south of Ireland. At Muckross, Killarney, there are specimens thirty to forty feet high, which have never been injured by frost, and in Wicklow a proprietor finds it succeed so well that he contemplates extensive plantations of it. If it can only be induced to take to bog-soil it will be of incalculable value to the country.



Rod and Gun.

SPORTSMAN'S CLUB OF CALIFORNIA.

There have been two meetings of this useful and flourishing Society since we made our last report. On the 3d of October notice was given that the Board of Directors had resolved to close the fishing for the season at Lakes Pilarcitos and San Andreas on the 16th of that month. The fishing in Lake Merced was continued until further notice. Quite good sport had been enjoyed there by members and others, some Lake Tahoe trout having been captured both by trolling and bait-fishing, weighing from three to nine pounds, and fairly good fishing there still continues. It was announced at the meeting that the Club had imported 250,000 salmon ova from the McCloud River, which were being now, with another lot lately sent, successfully hatched at Lake Honda, the Spring Valley Water Company having kindly granted the Club the free use of the necessary ground and water at that lake for the purpose. The Central Pacific Railroad and Wells, Fargo & Co. brought the eggs from McCloud River free of charge, for which liberality the meeting expressed its appreciation.

The following gentlemen were elected members of the Club at the above two meetings, and one previously in September: Messrs. E. V. Joice, Joel F. Lightner, and William P. Dewey, M. L. Brittan, William Craig, Henry H. Haight, J. T. Goodman, John O. Ferrall, Richard T. Maxwell, M. D., Benjamin W. Brown, Richard Homfray, Crittenden Robinson, and George Clabrough.

All the salmon eggs received had hatched well, and the fish seemed healthy. It is worth a trip to Lake Honda, where they are, to see them. The proposal to buy a scow for shooting purposes was referred to a committee, which did not recommend its purchase in the present infant condition of the Society. The members of this valuable and prosperous Club number several over 200, and their funds in hand amount to a considerable figure. We hope to see all its concerns managed with a judicious economy, in order to continue to advance its interests and usefulness in every way, and in continuing to supply the lakes with young fish in sufficient quantity to insure good sport in future years.

THE GROWTH OF SALMON.

A history of the growth of the salmon from the small ova or eggs, may be interesting in this place. Each adult female salmon lays from 800 to 1,000 eggs to every pound of her weight. In their healthy condition, the eggs are generally of a pinky or amber color,

with opalescent hues, semi-transparent, and exceedingly pretty in their effect. Sometimes, however, the eggs are very pale — nearly white in color; others, again, are of a bright coral red; but all that have a peculiar transparent iridescent hue are unmistakably healthy eggs. A tough, horny membrane is the "shell" which holds the embryo salmon and preserves it from injury. This external shell is exceedingly elastic; an egg dropped on the floor will rebound like an India rubber ball.

For a month or so no change is apparent in the healthy egg, as it lies in its bed of gravel in the running stream where it has been deposited by the mother, with the temperature of the water at about 45°. The eyes of the fish appear in forty or fifty days; these may be perceived as two small, black specks; and in another three or four days a faint red line is apparent, running round the interior of one side of the egg, and in the centre a small red globule appears. The thin red line represents the vertebræ of the fish, just forming; and the red globule is a minute quantity of oil, which is destined to be absorbed by the fish after it comes out of the shell.

Gradually the faint indications of life within the semi-transparent shell become more marked till, about twenty days after the first appearance of the eyes, the fish bursts its prison. It now presents a most ludicrous appearance, with the lower side of its slender transparent body affixed to an oval sac which it carries wherever it goes. The vital organs of the fish can be distinctly seen; the pulsations of the heart are easily perceptible; and the rapid vibrations of the gills show that it is, for the first time, breathing just as an adult fish breathes. The empty "shells," as they float about in the water, showing the rent by which the young fish breaks its prison bonds, now appear like little bits of an India rubber air-ball, or portions of the white membrane found inside the shell of a hen's egg.

The fry are now all alive and as active as fish can be. Some of them will be found with their tails turned up in an impudent manner; others bear their bodies in a becomingly staid longitudinal position; while others are strangely deformed. These unfortunates are unable to swim in a straight line, and can only turn round and round as on a pivot in one spot, lying all the time on their side, instead of swimming upright, and falling helpless to the bottom as soon as they cease their efforts at locomotion. These cripples generally die; though some of them, no doubt, arrive at maturity, as is proved by the instances—rare, it is true—of deformed salmon, with the backbone bent and crooked in various ways.

But the most curious instances of mal-formation are the fishy "Siamese twins." A double-headed creature is of frequent occurrence in a family of baby salmon, but these enormities seldom survive more than three or four days, though instances have been met with of a longer term of existence being given to these "monsters."

For some time after birth, the young fish do not seem to grow very fast; they are exceedingly active, and, though burdened with the umbilical vesicle, they swim swiftly about, rushing for a few seconds, and suddenly falling again to the bottom of the stream; they are unable to rest without touching the bottom.

Young fry do not require any food, for nature has provided it with a commissariat of its own. This vesicle or sac contains an albuminous secretion similar to white of egg, and a small

globule of oil, the whole of which is gradually absorbed into the system. After six weeks of this self-sustaining process have elapsed, the outer skin of the bag appears to diminish in size as the body of the fish increases.—*Chambers' Journal.*

THE FISHERMAN'S CLASSIC.

On the 9th of August, 1593, was born at Shallowford, near Stafford, Izaak Walton, the author of that charming book, the "Compleat Angler." Little is known of his history. He is first found keeping a small linen-draper's shop in the Royal Exchange, London. Thence, after various vicissitudes, he retired to his native place. Gifted with a poetic fancy, and being a keen lover of rural sports, the leisure he now enjoyed enabled him to impart to others a sense of the enjoyment he himself felt in his favorite pastime of angling. Accordingly, in 1653, appeared the "Compleat Angler, or the Contemplative Man's Recreation," a book which, according to Hallam, "has never since been rivaled in grace, humor, and invention." The work on its first appearance at once secured the public heart, and still continues to be one of the most popular of the English classics. Though by no means the first writer upon piscatorial subjects, Walton happily intermingled his precepts on the art of angling with lofty yet cheerful morality, and a wealth of fancy which, as applied to the subject, has never been surpassed. Prior to him, Dame Juliana Berners, Gervase Markham, and notably Thomas Barker, Walton's own instructor in fishing, had written on the gentle art, and their books were always popular; but they have none of them retained public favor, as has "old Izaak." He and Cotton (who added a second part to the "Compleat Angler" in the fifth edition of the book) are looked up to at present, as they have been for generations, by all anglers as their tutelary deities, the Gemini of the angling zodiac. Walton seems to have known as little of fly-fishing as he did of salmon-fishing; therefore, Cotton, who resided on the Dove, and had a long experience in all that relates to fly-fishing, the crown of the angler's art, supplied the deficiency. His portion is pitched in a much lower key, whether of moral purpose or imaginative power, but very fairly continues the plan on which his great master had worked.

The first edition of Walton appeared in 1653, since which time the "Compleat Angler" has been reprinted in every size and form, from that suited to the waistcoat pocket up to Pickering's magnificent edition, illustrated by Stothard. It has, moreover, been furnished with notes, appendices, elucidations, and the like, by numberless anglers and bookmakers, overlaid with abundance of details, which have often well-nigh smothered the text. Mr. Westwood, writing in 1864, enumerates fifty-three editions of the book—one in rather more than every three years of its life, which speaks volumes for its popularity. At length, to satisfy the curious, there has been produced by Elliott Stock, a London publisher, a fac-simile reprint of the original work. This book, coated in old-fashioned binding, and containing the original engraved plates of fish, struck off by a novel application of photography, is a bibliophilist's delight in every particular. Even the curious red and blue sprinkling of the edges is conformed to that of Walton's original edition. With this book in his pocket the angler can recline under the pollards at noonday, while eating his frugal meal, and at

once transport himself 200 years back into the time of the Cavaliers and Puritans.

Few books have suffered so complete a change of form, and survived so many additions without losing their first fragrance as has this. The "Compleat Angler," on its original entry into the world, consisted of 246 pages, or thirteen chapters, clad in modest brown calf, and illustrated by half a dozen admirably engraved plates of fish. These were indeed said, but it is thought without any foundation for the assertion, to have been engraved on plates of silver. All these plates and the due number of pages, even down to bad spellings and the like, are faithfully reproduced in this quaint little facsimile of 1876. It tells us, as the original charged its readers, that "fishers must not rangle," nor "be nice to fowl their fingers;" and it reprints the curious music of the angler's song (treble being one way down the page, and base looking in the opposite direction, to enable two people to sing from the same book), which is by Mr. Henry Lawes, a name that once recalls Comus to the scholar. Lawes composed its music, and is himself celebrated in it as one

> Who with his soft pipe and smooth-dittied song,
> Well knows to still the wild winds when they roar,
> And hush the waving woods.

Walton all but rewrote the book in the second edition, adding a third (190 pages, according to Westwood's "Bibliotheca Piscatoria") to it, and four new plates of fishes. Viator, the disciple of the first edition, now becomes Venator the hunter; and Auceps (the fowler) is a new creation, which enables Walton to introduce some of the most exquisite passages of his book on the nightingale, skylark, and other birds. Thus the book as known at present consists of twenty-one chapters, and the whole process of dove-tailing and tacking on of additions is a singular instance of a good book being used as the germ of a second edition, and not spoiled in the operation.—*Chambers' Journal.*

AN OPINION ABOUT FLY FISHING.

I love fly-fishing, because it is a fishing divested of much of its cruelty. I mean, of course, the artificial fly. It is all very fair to catch a voracious fish, while he is endeavoring to gobble up what he supposes a nice little fly. I always disliked to use live bait, and never did when I could avoid it. Walton had many good feelings, and in instructing you how to impale a frog in such a manner as to keep the poor devil alive as long as possible, he patheticallly urges it upon you to "*use him as though you loved him;*" for which affectionate admonition he has been sneered at most unmercifully by half a dozen people, who, although they may be very accomplished writers, are no fishermen. But in my early days I learned more humanity from Thomson than from any other person, and for a long time, whenever I thought of going fishing, I had humming in my ears:

> "But let not on your hook the tortured worm,
> Convulsive, twist in agonizing fold;
> Which by rapacious hunger swallowed deep,
> Gives, as you tear it from the bleeding breast
> Of the weak, harmless, uncomplaining wretch,
> Harsh pain, and horror to the tender hand."

These lines saved many a worm. It was Thomson, I think, who some lady said showed plainly in his works that he was a great fisherman and a great swimmer; but who, notwithstanding the lady's sagacity, judging from his works, never took a fishing rod in his hands, and never went into water. Thomson's worm puts me in mind of a time when

I was trying to entice into my pouch some trout from the Choconut Creek. They were shy, and I thought I would try some other bait, and looking around I found a worm. My head had been running on mixed mathematics and the doctrine of chances—a foolish thing to puzzle one's self with when fishing. As I sauntered along, I had been proving to myself that the probability of two subsequent events both happening, is equal to the product of the probability of the happening of those events, considered separately. Q. E. D. And had demonstrated the thing in my head most scholastically, when I said to myself, "Here is this poor worm. What *was* the chance, that in the immense extent of this globe, it should be here, in *this* spot; and in the great lapse of time since the formation of worms, that *this* very one should have existed at all; and if existing, been here, at *this point of time;* and that I—the individual *I*—should be here *now*, of all times; and be here *in this spot* of all space, for the purpose of catching a *trout.* That being here, at this time, of all times past, present, and to come, *I* should have found *this* worm, of all the worms of the earth, and should have put it on *this* hook, among the trillions of hooks, to catch a particular trout in this particular creek of all creeks of the world. And yet that chance has become a *certainty!* Prove me that, Mr. De Moiore! Poh! poh! 'tis all folly, and it shan't happen; and you shan't be put on this hook, nor be eaten by that trout, poor little worm! Then go off with you—wriggle away as fast as you can, and thank the doctrine of chances for your escape; and I'll bother myself no more with them. I dare say it was they that made me lose that last trout.

What fishing may be compared with fly-fishing for trout in a spring brook, overarched by Beeches, Birches, and Elms!—the day so warm as to give a pleasing consciousness of the protection derived from the majestic trees; the water so clear as to tempt you from the bank to walk into the stream, that runs dancing over stones and pebbles, or whirling around rocks, as if for the purpose of forming lurking places for the trout. You throw your fly, and they see it in its light descent, and dart at it; but one, more alert than his fellows, springs out of the water and seizes it before it reaches the surface.—P. H. R., *in Cabinet of Natural History and American Rural Sports, Phil.*

FIELD SHOOTING.

MY BEST DAY NEAR BRISBANE, AUSTRALIA.

"The voice of birds, the rush of wings."

Those who have read these chapters will no doubt be interested with a detailed account of the best day's shooting I ever had, or the day on which the largest number of birds was killed; for scores of days would all remain coequal in their amount of enjoyment, and it would be folly to say that one was better than another.

A young fellow named Miller and I decided to shoot over Sawyer's Point, and he built a canoe for the purpose. The best canoe for swamp purposes is one built of half-inch cedar in the same style as the small punts on the Brisbane River, and which are so useful to those enterprising anglers who engage on evening piscatorial forays around the Victoria Bridge. A shooting canoe must be flat-bottomed to insure steadiness, and curved at the ends to ride over the weeds and turn instantly with one stroke of the paddle. It should not weigh more than 80 or 100 lbs., and no more than two guns should ever be in a

canoe together under any circumstances whatever.

One splendid morning at daylight we took the canoe out to the upper swamp in a wagon, and launched it on a little creek which ran into the swamp. Before arriving at the place I killed three black ducks that were sitting in a little water-hole on the way down. On pushing out into the swamp we facetiously reminded the wagoner to meet us in the evening with all the spare wagons and horses he could find to bring the game home.

We had about three thousand acres of swamp before us, and our classic features were illuminated with hope, and sparkled with animation and expectation, as we glided noiselessly over the dark still waters. About half way out into the middle we opened fire with appalling effect among a flock of gray teal and red ducks. On this occasion I shot with a favorite single barrel muzzle-loader, and Miller with a double-muzzle loader, so the reader, when he arrives at the end and reads the number killed, will have some faint conception of the slaughter that would have occurred with two double-barrel breech-loaders.

Further on there was a belt of reeds, and as we pushed the canoe through and passed out into the open water, a bevy of swans were before us, and a lot of red duck. Three swans and four ducks got on board at this locality, and we passed on down toward the channel connecting the two swamps. The air was full of birds in scattered flocks, and the rushing of wings was only broken by the three shots at regular intervals, fast as we could load and fire. In passing through the narrow channel we shot a magnificent musk duck, and three swans that came flying along and met us in that pent-up avenue came down unanimously under the persuasive powers of three charges of No. 4. We slowly *debouched* into Sawyer's Point, among vast reed beds where no white man had ever stood before, and over clear still water, in places where the eye looked down upon enormous eels and swamp mullet and perch, gliding about among the bunches of green weed. Before us was an expanse of swamp and reeds stretching away in the distance for three miles, and bounded by the line of forest beyond, and round on the right and left.

Sawyer's Point was believed to contain more geese than all the other swamps on the Clarence put together, and numerous were the astounding stories told by sawyers of the old days about the denizens of that mysterious swamp.

I knew that it was one of the favorite resorts in the day time for the geese, which left it at dusk and flew off every evening for night feeding in the swamps of the surrounding country, returning at daylight in the morning. Therefore I was prepared to see a few of them, but certainly not for the sight which followed.

In gliding silently round a point of reeds, three geese got up out of a clump of rushes, and were promptly persuaded to sit down again. The scene which followed defies description; it was such a one as I never looked upon before or since. Startled by the double shot, flock after flock of geese rose in dense clouds away down far as the eye could reach, and fast as the echo of the report traveled over the swamp. The whole air was one moving mass of geese for more than a mile, countless myriads rising and falling in undulating waves as those first risen settled down and fresh legions arose. We looked at each other in unutterable astonishment,

scarcely crediting the evidence of our senses, and as if each looked to the other for confirmation. It required considerable numbers to astonish either of us, I can tell you, for we had both looked upon a few wild fowl before that day.

We pulled down the swamp, and as geese flew, or rose, within range, they came to an untimely end. In our ardor to get within range of a large flock, we got in among a thick mass of reeds broken down level with the water, and just allowing the canoe to move and no more. We had a couple of hours' work in getting out of these weeds, which remain vividly impressed upon my memory to the present day. We shot for about three hours in that swamp, and killed about twenty-six geese. In a day, with breech-loaders, probably a hundred would have fallen.

In exploring the south side of the swamp we found a small creek running through a belt of scrub, and opening into a large creek called Deer Creek, about six miles long, and nearly as large as the Brisbane River. It terminated abruptly at one end, and was lined on each side with dense and almost impenetrable scrub.

We hailed a lot of swans up in the point, and shot them as they flew past. We turned and pulled down the creek, passing through scores of swans and ducks. About a mile down the creek we came opposite to Goose Swamp, lying back about 200 yards, a swamp covering about 1,500 acres, and celebrated for the countless legions of ducks which are found there. We were then in country with which we were well acquainted.

By that time our canoe was nearly full of birds, so we took out over twenty swans, and skinned them on a little ridge between the creek and the swamp. When passing down there three years after, I saw the bones and skeletons of the unfortunate victims. We carried the canoe into Goose Swamp, and shot over it. It is a remarkable place. Along the centre from end to end, and about 100 yards wide, there runs a strip of bulrushes, which have grown and rotted in successive layers until there is such a dense accumulation of vegetable matter that the sportsman can walk all over, and four feet of water underneath him. At each side there is a broad belt of open water, covered with ducks of all descriptions, geese, swans, and pelicans. I was the first man who ever entered that swamp, and when I walked across the first belt of water, got on to the reeds, and walked across to the outer edge, which looked out upon the open water, there were swans and ducks before me in thousands, and so close and tame that a pocket pistol would have been effective. With the first shot of a single barrel I killed five ducks and three swans. It is a lively place to walk in. Just under the surface is a thick mass of vegetable matter, partly made up of rotten reeds, and partly of the hard gnarled roots of old bulrushes. One leg would be high and dry, and the other down about four feet. I persuaded all my enemies from time to time to come out and have a day in Goose Swamp; it lasted them during the rest of their earthly pilgrimage. It was enjoyment to me, but to the novice the stocks would have been an agreeable substitute.

When we arrived at the end of the creek and left the canoe in her resting-place for the night, we reckoned up: twenty-seven geese, forty-seven ducks, over thirty swans, and two dozen miscellaneous. The same thing could be done to-day in the same locality.

RAMROD.

Selected Articles.

TURMERIC.

This vegetable product is obtained from the *Curcuma longa*, Linn., one of a genus of ornamental perennial-rooted, and annular-stemmed, herbaceous plants of the Ginger tribe, which are found indigenous in the open sandy grounds of Malabar and Ceylon. The rhizomes or tubers from which the Turmeric of commerce is obtained are of two kinds, one round, the other long or oval, from about one and a-half to two inches long, and an inch in diameter, pointed at one end, and marked externally with numerous annular wrinkles. The tubers of the other species are cylindrical, not exceeding the thickness of the little finger, two or three inches in length, somewhat contorted, tubercular. Both kinds are yellowish externally, and internally more or less of an orange yellow, deepening into reddish brown. Their fractured surface has a waxy appearance. The leaves are palmated, broad, lanceolate, green above and leathery below; its flower stem rises from among the leaves, and is naked, and has commonly a height of two feet, and its flowers grow in a loose, lateral, cylindrical, truncated spike. The roots are principally imported into Great Britain from India, China, and Ceylon. The best qualities are firm, short, wrinkled, and heavy, free from worm holes, externally of a yellowish ash color, and internally of a deep orange yellow. They break with a short close fracture, which has a waxy appearance, and are easily pulverized. Their odor is fragrant, somewhat similar to that of Ginger; their taste is bitterish, aromatic, biting, and rather acrimonious.

Turmeric root possesses tonic and carminative qualities, and is much used by physicians in the East. It has a place in the pharmacopœia, but is now little used. It is used in Europe as a dye stuff, and is one of the principal ingredients in Indian curry powder. With an alum mordaunt it imparts a beautiful yellow and orange dye to cotton and woolen fabrics. From one of the species, *Curcuma angustifolia*, an alimentary substance is prepared in Travancore, exactly similar to arrow-root, and so pure as to be hardly distinguished from the true article, where it is much used as an article of food. In consequence of the presence of an aromatic oil, the other species, though abounding in fecula, are not suited to the preparation of arrow-root. Dr. Periera enumerates five species of this root as those which generally find their way into European markets, China, Bengal, Madras, and Java Turmeric. From the prices quoted in England at the present time, that procured from Java appears to be the most inferior quality, and that of Madras the most esteemed. The price of Java is quoted at £10 per ton; Bengal and Madras, £20 and £30 respectively. Periera calls the Madras Turmeric the most showy of all kinds of Turmeric. The tubers are large; some are long, with side branches; others are round and oval externally, in common with the preceding species, marked at slight distances by transverse ridges; but, besides these, the Madras species has slight longitudinal wrinkles. Externally the color is bright yellow, internally it resembles that exhibited by the fracture of gamboge. This plant has been cultivated for a number of years in the Brisbane Botanic Gardens, and samples of Turmeric shown at the Sydney Exhibition. The cultivation is much the same as that of arrow-root, and the plant thrives best upon a good

sandy loam. It can be successfully cultivated in the neighborhood of Brisbane, and along the coast line as far as Cape York. W. Hill.

CHAMPAGNE MANUFACTURE.

The extra labor for the gathering is chiefly obtained from Alsace, Lorraine, Burgundy, and the Ardennes. The pickers are summoned by beat of drum at daybreak each morning in the market-place of the villages adjacent to the vineyards, and then and there a price is made for the day's labor. This varies according to the work required to be done, and the speed with which it is necessary to accomplish it. The bargain struck, away go men, women, and children into the vineyard, each provided with a small basket and a pocket-knife curved like a reaping-hook. They are divided into gangs, each headed by an overseer, and as the small hand-baskets are filled they are carried to the end of the row, where specially selected hands are employed in what is called dressing the grapes for the press. In what are known as good years this operation is considered useless, and the manufacturer is compelled to purchase the vintage, good and bad together, just as it comes from the field. But any such reckless system is utterly impossible in most of the vineyards this year. At Verzenay, for instance, will be found a considerable quantity of rottenness, much worm-eaten and mildewed fruit, which if pressed in its present condition would assuredly have the effect of tainting the wine. So the system of dressing, happily for the manufacturer, is almost universal. Each bunch, as it is tumbled into the crate at the side of the vineyard, is carefully gone over by female fingers; the bad and cankered part is rejected, diseased stalks are pruned away, and some attempt is made to send the grape to the press in a decent condition. But even this hurried inspection is not all that could be desired, and the sharpest eye is apt to be deceived, particularly in the Verzenay vintage of this year. We frequently discovered in the very heart of what looked a regular and well-grown bunch a grape or so absolutely rotten, and capable of infecting its companions when they were heaped together in the press. The dressed fruit, when carefully finished and inspected, is quickly borne away in carts to the nearest press, usually situated in the village, and the refuse remaining represents the loss in quantity to the proprietor. The general color of the grape in the Reims district is black; but there are celebrated vineyards, such as Cramont, which only grow white.

The press is a rough wooden contrivance, and a huge block of wood is turned by a screw and worked usually by a wheel, up which the men climb, treadmill fashion. The first effect is to reduce the heap of purple-bloomed grapes to an ugly mash of stalk, pip, and skin, while the juice rushes out and runs down canals to the vats below. The subsequent pressures of the square cake of residue, which is cut into shape with a spade, and is as hard and crisp as turf, are not so liberal in the production of wine. This operation is a most careful and accurate process, for the grapes when delivered at the press are weighed, and it is known exactly how much liquor can be produced from this given quantity of fruit. Consequently each squeeze is accurately taken, and it is known to a hectolitre how much wine is made in each day. And what becomes of that residue of coagulated mash — all pip, and stalk, and stone, and beaten skin? It is carted

away to be sold for the manufacture of cheap wines, or to distillers, to be made into inferior brandy. The pressed juice is now gently pumped up from the lower vats to larger receptacles, when the earliest process of fermentation takes place. It is then drawn off into barrels, wherein a still more violent and rapid fermentation blows out the barrel bungs with its excitement, and then, after a very short stay in the village, the casks are borne away to Reims to be made into wine. You may guess what energy and industry are bestowed upon the earlier processes of wine-making in the comfortable, prosperous, and well-looking villages placed in the very heart of the vineyards of Champagne, when I tell you that in the pretty little village of Verzenay the material for no less than 2,000,000 bottles of champagne passes through the press. * * * The proprietors of the Pommery champagne manufactory were lucky enough to possess themselves some years ago of a deserted chalk quarry, and out of this have been constructed, with very slight additions and fortifications, some of the finest—if not the very finest—cellars in the champagne district.

It must be remembered that the maker of champagne requires immense storage rooms. The juice of the grape comes to him in barrels; it leaves him after an elaborate process of manufacture in bottles, and in those alone is champagne perfected for the market. This delicate wine does not require cellars in the ordinary and accepted use of the term alone. They must be deep; they must be spacious; they must be capable of maintaining a proper temperature; they must not be cramped, cabined, or confined, but lordly, vast, and, before all things, high. So, thanks to characteristic energy and a liberal supply of capital, the water was finally pumped out of the abandoned pit, the intersecting tunnels were made, the arches were shored up, the flaws and faults in the chalk were patched, the floors were simply concreted, and now as they stand the Pommery caves are the best possible example of the enterprise of commerce, and as good a locality as could be found for showing the general process by which grape juice is made into champagne. The first cellar is on what may be called the ground floor, and is rather a *chais* than a cave; the enormous space is deliciously cool. It is, in fact, a vast hall, the burning sun is carefully kept out; the temperature is jealously regulated; the windows are high and small, and there is a sense about one of a pleasant coolness, and not of any shuddering chill. At the extreme end of the hall are the offices and the visitors' waiting-rooms, but they occupy but a very little of the main space, which is devoted to the barrels of wine which are undergoing the necessary process of fermentation before they are carried to a lower depth, and the bottling commences for the year. Into this place the casks of juice are brought straight from the presses in the vineyards, and in this stands the mighty vat or *cuve* in which the various kinds are amalgamated, and the wine of every year is made. I have endeavored before to hint at this vital moment in the manufacture of champagne; but let it now once more be understood that the wine is not the growth of one district, but the product of many, and that the difficulty of the whole business is at the side of the *cuve*. A little more of the vineyard of Ay, a little less Verzenay, a dash of Bonzy, a suspicion of Cramont, a thimbleful of Mailly, and so champagne is made.

The *cuve* satisfactorily filled, the elaboration of champagne has scarcely com-

menced. The bottling takes place in the spring time; that is to say, this year's vintage, which I have seen gathered and pressed, and which I have tasted in its cloying and saccharine state before going into the cask, will not be sufficiently fermented and fit for the *cuve* until the spring of 1877. Once the wine has passed this test it is temporarily bottled, corked roughly, and strapped about with a stout iron ligature. The wine has fermented in the cask, and will continue to do so. Every single one out of these millions of bottles of champagne, in their preparatory state, must necessarily contain a thick muddy deposit, and the art from this point is to coagulate the sediment, to twist it and turn it until it forms into a ball, and eventually to get it up to the top of the bottle, so that it may be expelled with a bang when the temporary cork is taken out and the proper one is adjusted. This gradual coagulation and expulsion of the sediment is what may be called the conjuring trick of champagne making. It is the duty of one person to go around the cellars, cave after cave, and bin after bin, and give every bottle a gentle wriggle, the turn of yesterday having been accurately marked at the foot in chalk. In process of time, and with much gentle handling, the sediment gradually ascends to the top of the bottle, and settles at the base of the cork. Once firmly established there, it is expelled, cork and all, with a pop and a bang, and the bottle of wine is left minus its sediment, clear as a bell.

Even yet the vital moment has not arrived. It is too dry at this moment for English palates, and now comes the time when the sweetening liqueur, composed of many good things, is added to the manufactured wine. English champagne—or rather, not to be misunderstood, champagne for the English market—requires very little of this foreign ingredient—a small percentage; Germany takes its champagne very sweet, indeed, and both Russia and France moderately so. All this requires care and judgment; but when as much liqueur has been added as is judged sufficient for each market, the bottles are properly corked and wired, all by hand, and are sent up stairs to be made pretty for the various markets. England likes for the decoration of its joyous wine gold foil, pink paper, rush cases, and wooden crates. Other countries are partial to waxed bottle-necks, disdain pink paper, and insist upon the conveyance of champagne in neat wicker baskets.

The visitor is informed that in looking over the caves of Mme. Pommery he has traversed no less than twenty-one acres of cellarage, and is once more told that every bottle of wine placed on the table passes through at least three hundred hands in its manufacture. The caves of Mme. Pommery at Reims are always, through the kindness of that lady, open to the inspection of the public.

It may be well at this point to remark generally upon the likelihood and promise of this year's vintage in Champagne. I have seen a bountiful supply of grapes in the vineyards of Ay, considerable disease and porriture at Verzenay, and have heard excellent accounts from Epernay and elsewhere. As remarked at the outset, the quantity is good; the quality is doubtful. If you will follow my brief description of the manufacture of champagne, you will see that the result of the wine harvest of 1876 can not be accurately determined until the various cuvées are composed from the selected juices. But there is one strong fact which will be likely to influence

public opinion in judging the commercial result of the vintage. It is this: The manufacturers of first-class champagne for the English market are not buying in any large quantities. In that splendid year of 1874, they were at the vineyards begging for more grapes. It is not so this year. On the contrary, the growers are begging for the custom of the manufacturers. The wine that we like in England can not be made out of indifferent fruit; and the year 1876 will not be celebrated for its dry champagne. — *Correspondence London Telegraph.*

OREGON FLAX FOR FIBRE.

For some time past we have made mention of the enterprise of Messrs. Jesse Parrish and Charles Miller, two well-to-do and energetic farmers living near Jefferson, numbered among our best citizens, who have devoted much time and capital, as well as the use of a large body of land on their farms, which are contiguous, to the culture of flax of the Dutch variety, best calculated for fibre. We had a call from Mr. Miller the past week who furnishes us with valuable items confirming their success in this important branch of production. These gentlemen have raised two large crops of remarkable excellence, which was established by the award of a medal at the Centennial to their product.

We are glad to learn that they have disposed of their lint—for they have manufactured it themselves—at a very satisfactory price—$300 a ton, which is fifteen cents per pound, to Mr. Crane, who has located at San Francisco to engage in the manufacture of twine, thread, etc. They have to refuse an offer for ten tons to be shipped to Dundee, Scotland, for the reason that their stock is all pre-engaged. Their flax mill is now turning out three hundred pounds of lint per day, and they feel every encouragement to continue the business on a large scale. Mr. Crane, of San Francisco, pronounces the lint a first-rate article.

Fifty pounds of their flax was shipped to Dundee, Scotland, through the agency of Mr. Wm. Reid, Portland, where it was manufactured into linen and pronounced by the manufacturers as good as any in the world. The same company that worked up this sample and made this report wrote to Mr. Reid that they would send machinery here to manufacture linen provided they could be supplied with sufficient lint to run the first year. All these facts combine to show that flax fibre can be made a leading industry in Oregon and lead to the establishment of important manufacturing interests in this State.

Mr. Miller also informs us that a company is organizing in New York State for the purpose of sending an agent to Oregon to secure the raising of flax fibre to be sent back East and supply factories there. Those who are engaged in manufacturing flax there think there is no such flax raised anywhere as they have received from Oregon. We have, then, what seems certain to prove a permanent paying product that our farmers can depend upon for change of crops, and which can be manufactured into lint here, and will eventually lead to the establishment of linen factories in Oregon. The permanence of this production and manufacture can be judged from the history of flax culture and linen manufacture for a hundred years past in the north of Ireland, where great cities and immense manufactories have grown up, permanently sustained by the successful cultivation of flax in the surrounding coun-

try, which cultivation and manufacture have been a source and means of lasting wealth and prosperity. We possess at least equal facilities for growth and manufacture and can therefore count on equally successful results.—*Willamette Farmer.*

FRUIT POLLEN.

Among the interesting questions by no means as yet definitely settled, says the N. Y. *Independent*, is that which refers to the immediate effect of pollen on fruits. Up to a few years ago it was thought that there was no immediate effect, and that the influence was only seen in the plants produced from the seed. But in the case of the Indian Corn it is clearly proved that there is an influence direct on the seed itself. It is also thought that there is an influence on Pumpkins, Squashes, and other cucurbitaceous plants; but this is little more than an impression derived from cultivators, and, so far as we know, there have been no experiments directly made to test the point. There have been many curious facts placed on record that seem to be explicable on no other theory; but it is a good rule not to accept a guess in cases where direct experiment can be made. In the Indian Corn the change immediately effected seems confined to the seed. The carpellary structure remains the same. If the cucurbitacæ, or other class of plants of a somewhat similar character, had their fruits immediately affected, it would be regarded as more remarkable than that the naked seed of Corn should change. Mr. C. W. Garfield, of the Michigan Agricultural College, deserves the credit of attempting direct experiments with the Apple, and he believes there was a direct effect on the fruit. He made ten crosses, of ten specimens in each cross. There appears to have been ninety-seven fruit resulting. Only three kinds showed any change from the peculiarities of the female parent. In one it was the pollen of the Wagener variety on a Tallman Sweet. Unfortunately, the Tallman Sweet is known to be variable, independent of cross fertilization, so that this needs to be gone over again. If a number of trials between the two always had the same result, it would be conclusive. Another was a Tallman Sweet on a Red Astrachan. The distinct character of these Apples renders the result interesting. The Apples were mild, color (deep red in the female, yellow in the male) modified, and the form flat. There is no doubt of a great probability here, but it would be still well to repeat the experiment with the same two kinds another year. The other case in which change was noted was where the Wagener was the female, and the Tallman Sweet the male parent. The change was in respect to flavor and color. These are among the most interesting facts we have met with in relation to this subject. Flavor (that is, in respect to sour or sweet), form, and color will vary so, even in the same variety, and when there is no thought of cross-fertilizing agency, that it would be safe to ask for a few more experiments before regarding the matter settled. There are other points not subject to inherent variation, that it would be as well to watch the effect of hybridization on.

Japanese Persimmon.—A year ago we mentioned the receipt of a Japanese Persimmon, one of the first crop borne in California. The tree at Santa Barbara has borne again this year, but the fruit is now larger and different in form. It has the size and shape of a Fall Pippin, the color of orange vermillion.

Editorial Portfolio.

OUR FRONTISPIECE.

Australian Blue Gum Tree. — This variety of the Eucalypti (*Eucalyptus globulus*) is undoubtedly one of the most valuable and handsome trees which the munificence of Nature has presented to the world in the way of ornament as a shade, and utility in some respects as a timber tree. In its natural localities in many instances it attains a height of from 300 to 400 feet, with a diameter of 40 feet. There are no less than 38 varieties of this given by botanists, all evergreens, and more or less valuable and beautiful in foliage and flowers, the colors of the latter being either white or yellow. Nat. ord. *Myrtaceæ*, allied to *Metrosideros*.

As a forest tree the Blue Gum is unsurpassed in rapidity of growth, and will be found useful when planted in belts, as a hedge, and pruned, allowing them to branch near the ground. They may also be planted on low grounds on river banks as an effectual barrier against the encroachments of tide water in cases of overflow. We recommend planting this tree largely in all places that are barren of timber, especially on this coast, and in all the Southern States.

As a shade tree the Eucalyptus globulus requires much attention in judicious pruning, to keep down its natural character for rampant and excessive growth. For a sparsely wooded region, where the temperature does not descend below 25° Fahrenheit, probably no variety of tree can be grown to the same size in the same period of time. The other species of the family, but little known here generally at present, will at no distant day become perhaps even more popular than the Blue Gum, whose wood is harder, coarser grained, and better adapted to the thousands of uses to which timber is applied; and when it becomes known that this genus has among its members species whose wood can be converted into shingles, studding, and weather-boarding, and that buildings constructed of them will be not only remarkable for their durability, but possibly nearly as fire-proof as are iron buildings, then the value of such species will be better appreciated by tree-growers.

The medical qualities of the Eucalyptus globulus are said to be numerous; the leaves being used largely in the manufacture of a medicine which has been found to cure diseases of the kidneys, asthma, dyspepsia, and fevers of various kinds. In places that have been subject to malaria and fevers, after planting the Eucalyptus, some persons state that, in a few years the people become entirely free from the diseases incident to those localities, and low, wet places become comparatively dry and healthful.

For the culture of the Eucalyptus the seed is usually planted during the spring and summer months, in shallow boxes. Fill the boxes nearly full with fine compost; near the surface, to the depth of one inch, the soil should consist of nearly half sand, to prevent damping; cover the seed one-quarter of an inch, and water with a fine sprinkler as often as the soil becomes quite dry; set the boxes in cold frames; if no glass is handy make covers of laths one inch apart, or canvas may be used; when the plants make second leaf transplant in boxes of good soil; the plants to stand in rows three or four inches apart; when they become well rooted, and about six inches or more in height, they may be transplanted with a spade or trowel where they are to remain. In planting a forest in

good soil, set them eight feet apart each way, and cultivate until well established.

One of the peculiarities of the E. globulus is, that when young, the leaves are broader and different in shape from those when it becomes more fully grown; the older leaves being more narrow and much like the foliage of the Peach in shape; and the young tree presents at the same time two kinds of differently formed leaves, the lower tier being very broad, and the upper narrow.

GOVERNOR STANFORD'S PRIVATE CITY GARDEN AND CONSERVATORY.

We had the pleasure of viewing these new grounds and the conservatory a few days since. They are as yet in rather an unfinished state, but will be completed in a short time. There is nothing of the kind in the city or country of their size that can equal them, both in design and number of beautiful and rare plants and flowers. The greenhouse and surroundings are under the able management and care of Mr. Jas. T. Murphy, and they do much credit to his judgment and taste. Many of the flowers are handsomely planted in groups—such as Rhododendrons, Azaleas, Heaths, etc. Here are to be seen the very finest and choicest of plants. Among the numerous kinds of plants, flowers, shrubs, and evergreens, may be found dwarf flowering Orange and Camellias; near the mansion Araucaria Bidwillii and excelsa, Kalmia latifolia, Elœagnus aurea variegata, Veronica imperialis and variegata, Juniperus Atzantica, Cedars of Lebanon, Ficus macrophylla, Palms from Colorado, of the most splendid varieties, and the newest and choicest Roses (their stems defended with moss) are planted round the borders; among the best are Banksia arundis and Emperor of Morocco. A variety of Tree Pæonies, Phygelius capensis, Aralia japonica and papyrifera from Japan, Acalypha marginata, with foliage of a shining bronzy red color, with a fiery red margin; Adhatoda cydonifolia, a shrub with rosy purple flowers; Buddlea Lindleyana, a hardy shrub with dark purple flowers; Centropogon Lucyanus, a shrub with continually blooming bright red flowers; a variety of Wigandias, with a number of very select plants and flowers too numerous to mention. The grass had been sown only three weeks, but the lawns were nearly covered with a lovely verdure.

A large and graceful fountain is to be erected in the centre of one of the grass plots on the south side of the mansion. The soil is of the richest, and about three feet in depth. Along the steep and long walls of the division fences beautiful wire-work has been erected, upon which there are the best and rarest climbing plants. The beds are all planted with the finest and most superb flowering plants of all the best kinds, with dwarf border plants at their outer edges. The walks are all paved with black and white chequered marble. The most elegant vases filled with plants will be placed at some of the corners. Statuary is omitted, as it is always out of place except in extensive grounds.

The architecture of the conservatory is graceful and attractively beautiful. Its future contents will, of course, like the whole of this splendid mansion and garden, be the best and most choice gems that great wealth can possibly purchase. Altogether, nothing seems to have been omitted that money and taste can accomplish, and although all is new, we

can well imagine what the magnificent *tout ensemble* and total effect will be after a few years.

VICTORIA REGIA—THE QUEEN OF WATER LILIES.

We are not aware that at present there is any location in our city and its neighborhood where this wonderful water plant can have sufficient space or can probably be made to succeed better than in the large conservatory in the Exotic Gardens of Miller, Sievers & Co., where there is already a large pond or reservoir for water plants, and where the proprietors may be likely to be satisfactorily rewarded by a large growth of flower and leaf. By skillful culture in many parts of Europe, and also in this country at Mr. Cope's, Springbrook, near Philadelphia, success has been completely obtained. There was a great excitement there, as there will be here when the Victoria blooms for the first time, for when that occurred at Mr. Cope's, his grounds were reported to be in complete possession of the public.

The committee on plants and flowers of the Philadelphia Horticultural Society were present on the second flower blooming. They measured the petals, which they found seven inches in length, and the crown or disk of the flower three inches, thus making the diameter of the whole seventeen inches. This is three inches larger, it seems, than any flower produced in England. The leaves were also six inches larger than any grown there. The natural conditions of California, although in a conservatory, are likely more favorable than they can be either in England or in the East. There the water is 85° generally, out of doors, and the atmosphere at 75°; here it is just the reverse, which is undoubtedly more like its native country. The conservatory at the Exotic Gardens we should consider, however, not too warm for it in our San Francisco climate. Mr. Cope states that he was satisfied that he had hit upon the method of cultivating the plant, and that both the flower and the leaves were equal to any found either in a native or foreign state, in any part of the world. Although all that was accomplished at a great expense of money and personal exertion, he was richly repaid for his efforts. Even Mr. Longworth, of Cincinnati, the wealthy and enthusiastic amateur horticulturist, when he had proved everything, and who was inclined to regard what was new and untried in his favorite pursuit as humbug, said, in a letter to Mr. Cope, that "there was but one plant in the world—the Victoria." He added, however, that he would present Mr. Cope with a fresh milch cow if he failed to grow the Lily without heat. By this he meant that he could grow it in his pond. Mr. Cope's plant was also grown without fire heat. He had no fire since the 21st of June. The plant in the kitchen garden, which had no fire at any time, was very beautiful, and would have bloomed, he thought, if it had been planted a month earlier. As it was, he was not without hope that it would give him a flower. Mr. Cope spoke of a flower that bloomed one evening as more gorgeous than any of its predecessors. As its change or conversion was going on in its second stage, it seemed that a pink and red hue greatly predominated over the white. He cut the flower, placed it on a thin circular board, a foot in diameter, which it completely covered, and sent it to a wedding party. Mr. Cope stated that the Victoria was one of the few things that has not been exaggerated; nor is

it possible to exaggerate it. It is truly a wonderful plant.

The Victoria, nat. ord. *Nymphœaceœ*, is a stove herbaceous aquatic, propagated generally by seeds, sown in strong peat, and planted out in a reservoir of heated water as soon as germinated. From the size of the leaves, the tank must be twenty-five feet in diameter; and if the water is moved, or is being constantly furnished with a fresh supply, the plants will thrive all the better. It has been grown in the open air, not only by Messrs. Cope and Longworth, as stated, but by Messrs. Weeks, near London, England, the water of which was heated to 80° by hot-water pipes.

FRUIT CULTIVATION AND REPORT OF FRUIT AND VEGETABLE MARKET.

BY E. J. HOOPER.

As the season for planting orchards of all sorts of fruits is close at hand, and the late copious rains are very favorable for that object, we herewith give a list of fruits suitable for the San Francisco market. The best soil for general orchards is a deep, rich, calcareous one, sufficiently elevated to insure good natural drainage, and, away from the coast, a northerly aspect preferred. This description of soil and aspect, inclining toward the foothills, or on them, will always, except in extremely dry seasons, bestow a delicious juiciness to all fruits so located, and a dryness prevented, which is so detrimental to all enjoyment in their being eaten in the natural as well as in the culinary state. Owing to the plentiful, well distributed, and gentle rains, we had last winter and spring, all our fruits this year, especially Apples, have been uncommonly juicy and palatable. The Æsopus Spitzenberg has been prominently fine, owing, we think, to this cause, and, by the by, this highly-flavored and most deservedly popular sort has been remarkably abundant in our markets.

For a small orchard planted for the supply of the San Francisco market, the selection need not be more than six varieties, three reds and three yellows, in the order here named: Red—Northern Spy, Baldwin, Æsopus Spitzenberg; Yellow—Roxbury Russet, Yellow Newtown Pippin, Swaar. These kinds are all well spoken of generally, and the writer knows from experience that there are none more profitable or more in demand on our stalls. In addition to these, for their beautiful complexion and coloring, some Blue Winter Pearmains Romanites, and small, wax-like Lady Apples, may be added.

For a family orchard, say of 100 trees, 13 Cherries, 20 Plums, 25 Pears, and 40 Apples may be grown, with 25 Peaches.

Cherries—2 May Duke, 2 Elton, 2 Early Richmond, 2 Vanskyke, 2 Gov. Wood, 2 Black Republican, 2 Black Morilla.

Plums—2 Green Gage, 2 Imperial Gage, 2 Red Damask, 3 Lawrence's Favorite, 2 Columbia, 2 Jefferson, 2 Washington, 2 Helm's Plum, 4 Peach Plum.

Pears—2 Madeline, 2 Catharine, 1 Summer Beauty, 2 Julian, 2 Bartlett, 2 Seckel, 2 Fall Butter, 2 Duchess d'Angouleme, 2 Duke d'Aremburg, 4 Winter Nelis, 2 Vicar of Wakefield, 1 Easter Beurre, 1 Pound Pear, for curiosity of size.

Apples—2 Early Harvest, 2 Red Astrachan, 2 Red June, 2 July Rough, 2 Summer Queen, 2 Gravenstein, 2 Rambo, 2 Waxen or Gate Apple, 2 Fall Pippin, 2 Rhode Island Greening, 3 Golden Russet, 2 Baldwin, 2 Northern

Spy, 2 Spitzenberg, 3 Roxbury Russet, 3 Yellow Newtown Pippin, 1 White Bellflower, 1 Yellow Bellflower, 1 Small Red Romanite.

Every farmer and villa resident, besides the above, if he has enough space, should have a good selection of Grapes and small fruits.

Speaking of the foot-hill country, we may now safely state that there is hardly a fruit or tree capable of successful culture in any other portion of our State, but can be grown there equally as well, and in juiciness and other valuable qualities equally as well as in localities generally considered their habitat. And we will here present an extract from a letter of a correspondent on this subject, which in the remarks made is a very sensible one, and which fully bears out our opinion in this respect:

"The Orange, the Lime, and the Lemon mature, and the Fig finds here a genial home, while the more hardy Cherry, Apple, and Plum attain in this region the greatest perfection with the least possible care. It is the land of the Grape, the soil and climate surpassing those of Italy and France in the adaptation to the growth of the vine. And yet, with all these natural advantages, fruit-growing has not proved profitable here. In the first place, the varieties planted have been mostly of the ordinary or inferior kinds, unfit for curing, and which will not, when green, pay cost of transportation to San Francisco, the only place where large quantities of even good fruit can be disposed of. Then, our people are deficient in those habits of care and attention requisite to the profitable prosecution of these and similar small industries. They are not content to realize trifling gains from a variety of sources, such as producing butter, cheese, eggs, honey, wool, etc.; the raising of pigs, poultry, and lambs, the sale of vegetables, dried and green fruit, and the like, affording healthful and remunerative employment to the women and children of the household, as is the case among the farmers and producing classes in the Eastern States, and more especially in European countries. They are wanting in good husbandry and good housewifery—are too little disposed to earn or to save in a small way, constituting what the more frugal and thrifty Yankee denominates a shiftless population. When for these habits there shall be substituted those of greater industry and economy, the inhabitants of our rural districts will become prosperous, wealthy, and contented, and hard times among them will be known no more."

The first rain we had this fall considerably injured the Grapes, and destroyed large quantities of Raisins. About the second week in last month (November) Peaches and Strawberries were yet in the market, and some few Plums. Apples were plentiful, very good, and cheap. A car-load of Lemons, Nuts, etc., arrived from New York. Grapes, notwithstanding injury from the early rains, still made a grand exhibition of this noble fruit, for the many splendid varieties of which California is so deservedly famed and notorious.

The prices of Grapes about the 25th of last month (November) became somewhat higher, but they are yet sufficiently abundant, and the prices rather moderate. The different varieties retailed as follows: Mission, 5c. to 6c.; Black Hamburg, Rose of Peru, and Black Malvoise, 6c. to 8c.; Muscat of Alexandria, 8c. to 10c.; White and Flame Tokay, 8c. to 10c.; Black Morocco, 10c. to 12½c.; Purple Damascus and Olivita, 15c. per lb. A few Strawberries, Raspberries, Plums, and Peaches were still

coming in. There was no change to be noted in vegetables. Potatoes were very plentiful at $1.25 to $1.50 per 100 lbs., by the single sack, delivered. Watermelons and Cantaleups were finally out of the market. New Potatoes were 8c. per lb. Apples arrived in large quantities about the third week in last month, and could be sold only at low rates. They have been more plentiful this year than was ever before known, and as that fruit on the trees, however overloaded, hardly ever receives any thinning, the bulk of the Apples are undersized this season, and can hardly be sold at all. The following are current rates: Apples, choice, 75c. to $1 per box; common, 35c. to 50c. Quinces, 65c. to 75c. per box. Eastern Cranberries, $13.50 to $15 per barrel. Pears—Winter Nelis, $1 to $1.25 per box; cooking, 50c. to 75c. Strawberries, $12 per chest. Figs, 4c. to 5c. per lb. Oranges—Tahiti, $30 to $35 per M; Mexican, $25 to $30 per M. Lemons—Malaga, $10 to $11 per box. Bananas, $1.50 to $4 per bunch. Cocoanuts, $5 to $6 per 100. Dried Fruit—Apples, 5c. to 6½c. per lb.; Peaches, 8c. to 8½c.; peeled, 20c.; Pears, 8c. to 10c. per lb.; Plums, 3c. to 6c.; pitted do, 12½c. to 13c.; Prunes, 12½c. to 17c.; Apricots, 10c. to 12½c. per lb.; Figs, white, 12½c. to 15c.; black, 5c. to 6c.; California Raisins, $1.25 to $2.75 per box. The California Oranges are good, quite large, sweet, and full of juice.

At the beginning of this month (December) the supply of summer vegetables became much diminished. Egg Plant, Peppers, and Green Corn, ceased to make their appearance, and Green Peas and String Beans became scarce and higher in price. Tomatoes and Cucumbers were still plentiful, but of inferior quality. The market was overstocked with common and inferior Potatoes, and prices were very low, but good and choice from Nevada and other good localities were maintained at $1.25 to $1.50 per 100 lbs., by the single sack, delivered.

A few Strawberries, Raspberries, and Plums were still coming in, and met with a fair demand. What will our Eastern brethren think of this for the month of December? Of course the Strawberries, although assisted by the plentiful rain which fell about six weeks ago, were previously sustained by irrigation. This is the fourth or fifth crop. Apples, Pears, and Quinces continued plentiful. Grapes were also abundant, but the quality of most kinds was rapidly deteriorating. The following varieties were to be had at the prices annexed: Mission, 5c. to 6c.; Black Hamburg, Rose of Peru, 6c. to 8c.; Muscat of Alexandria, 8c. to 10c.; Black Morocco, 10c. to 12½c.; Flame Tokay, 8c. to 10c.; Purple Damascus, 15c. per lb. We quote the following from that capital authority, the *Commercial Herald:*

"The steamers Montana and Colima brought 3,674 boxes Mexican fruit, consisting of 350,000 Oranges and upward of 400 boxes Limes. There are two cargoes of Tahiti Oranges now discharging, which, together with those from Mexican ports, will supply the demand until the new crop of Los Angeles Oranges make their appearance. Los Angeles Limes have completely overstocked the market, selling at $3 to $5 per M, while the Mexican variety are preferred at $9 to $10 per M; owing to their larger size and being always clean, they have the preference with buyers. Apples are coming in freely; inferior lots are dull at quotations. Pears of the Winter Nelis variety are in demand. Grapes, unless first-class, are extremely dull and low."

WORK FOR THE MONTH.

We have had one early and plentiful rain, but as several weeks have elapsed since it fell, the interior counties are now in want of more to keep the young grasses growing, as well as for the purpose of plowing. We may now, however, at any time expect our generally regular installment of rain, and it is most important that the usual rainy season should not take us horticulturists, as well as agriculturists, by surprise.

While little can be done in our orchards beyond the completion of the gathering and storing of fruits in this month, ornamental trees and shrubs and flowering plants should receive considerable attention. We should advise at the present time to entirely dispense with the irrigation of plants, trees, and lawns; at any rate, in our coast counties and in our city. The young growth should have time to harden. Proper pruning should be done in all cases as early as possible. In this climate trees and shrubs are apt to make enormous growth, and will expand in one season out of all shape and beyond our control unless we use the knife freely and adequately to their needs. Evergreens in particular should be balanced, the superfluous growth cut away, and the trees supported by proper stakes, so as to enable them to withstand our strong winds. In most cases, trees are planted too thickly and without a due reference to future growth and development. This is erroneous, except where planted for grouping, which should only be effected on the large and extensive parks of country residences. Whenever it is apparent that trees stand in too close proximity to each other, one should be removed; and where flowering plants are overshadowed by trees, it is inevitable that one must give way to the other. In some cases, this action can be modified by the removal or cutting back of some of the branches, so as to admit a free circulation of air and exposure to the rays of the sun at least for a few hours during the day; but it more frequently occurs that we can not suggest any other remedy than the removal of the trees or the abandonment of the flowering plants in their vicinity. We have, as a rule, too many trees in our gardens, and when we take into consideration how rapidly and effectually they exhaust the soil, it can not surprise any one that the smaller plants suffer severely for want of nourishment. We often observe a great dislike in proprietors of gardens to take out a choice, perhaps rare and beautiful, shrub or tree; but it is sometimes quite necessary to do so to remedy a density of shade and for the benefit of the smaller plants, as well as for the beauty and general effect of the whole grounds, especially if it be only a small city lot or a confined space in the suburbs.

Pansies, which have been sown in September and October, may now be planted out where they are desired; the soil for them should be particularly enriched and well prepared. Our winter season, at least rather late, is the time for Pansies, Violets, Primulas, Daisies, Aubrietias, and all other hardy border plants, and they will do better if they are transplanted at this time.

This month is a favorable time to plant Rose cuttings, both in frames and in the open ground. If planted in frames, a moderate bottom heat should be provided; if planted in the open ground, the cuttings ought to be at least four inches long and of strong, healthy wood. Prepare the ground well and deeply before planting, and if too heavy add some sand. Some of our

deciduous shrubs grow well from cuttings made in the same way, and the wood is now in a proper condition for that purpose. There is no necessity for planting the cuttings immediately if not convenient; they may be tied up and kept in a shady place and partly covered up with soil. Some Tea and Bengal Roses, which make very little wood in comparison with the more robust growing Perpetuals and Bourbons, would be better grown in frames, as short cuttings of three or four eyes only are required under this method.

The plants in the greenhouse and conservatory must now be kept rather dry, as all the soft-wood and succulent varieties are apt to dump off during our cool nights, particularly in wet weather. Tender plants in our greenhouses and conservatories suffer not so much from the effect of cold as from dampness, and to have the Begonia, Coleus, Maranta, and other tender ornamental foliage plants do well during our winter months, some artificial heat should be provided. The various kinds of apparatus for heating in use in the Eastern States and in Europe are too expensive for us. We require a mode which will give a moderate amount of warmth during the nights and the cold rainy days, which will disperse and rarify some of the moisture which penetrates our greenhouses and does so much mischief. The thermometer rarely falls below 45 or 50, and we think that with a very simple heating apparatus we may be able to keep above 55. At some of our nurseries there have been introduced simple and cheap apparatus that answer the purpose well.

Unless bottom heat (which can be made of fresh manure and tan-bark) propagating at this time can not be safely undertaken, and at the same time it is a well established fact that greenhouse plants in general should be propagated in October, November, and December. In fact, those three months answer very well for the propagation of hardy plants also. Artificial heat is therefore most desirable for such work. The want of flowers is particularly felt during our winter months, and with a small degree of warmth our plants in the greenhouses and conservatories may be kept in full bloom throughout the winter. Under all circumstances the houses should be well ventilated when the weather permits it.

Unless plants can be kept in a growing condition by artificial heat, they will do much better in small pots. We would therefore caution all against the over-potting of plants. Tender foliage plants can be kept in a remarkably good condition in the winter in three-inch pots, while those in large pots seem to suffer most. The necessity for thorough drainage at the bottom of the pots and boxes is imperative, and must be looked after at once. A good effect is also produced by the application of warm water whenever the plants actually need moisture.

Editorial Gleanings.

Fruit for Food.—If a child's digestion becomes impaired and the gastric juice becomes weakened or defective in quantity by overheating or bad food, the whole alimentary canal becomes clogged and filthy, and furnishes nests for such worms as will breed there. In this weak condition of the system they can not be destroyed by the process of digestion, and hence great harm comes from them. Now, it is an interesting fact that fresh, ripe fruit is the best preventive for this state of things. Dr. Benjamin Rush pointed this out a hundred years ago. He made a series of

experiments on earth worms, which he regarded as more nearly allied to those that infest the bowels of children than any other, with a view to test their power of retaining life under the influences of various substances that might be used as worm medicines. The results proved that worms often lived longer in those substances known as poisonous than in some of the most harmless articles of food. For instance, in a watery solution of opium they live eleven minutes; in infusion of pink root, thirty-three minutes; in claret wine, ten minutes; but in the juice of red cherries they died in six minutes; black cherries, in five minutes; red currants, in three minutes; gooseberries, in four minutes; whortleberries, in seven minutes, and raspberries, in five minutes. From these experiments Dr. Rush argued that fresh, ripe fruits, of which children are very fond, are the most speedy and effectual poison for worms. In practice this theory has proved correct.

Fruit for Europe.—Orders have been received in this city for several tons of Alden fruit, mostly Apples and Apricots, to be sent to London and Hamburg. Samples sent last year to several points in Europe were received with great favor, and assurances are given that a large demand will follow as soon as the goods are advertised and known in the foreign markets. The Alden Apples will cost $270 per ton in Liverpool, including $15 freight, leaving about 13 cents a pound as the price received here by the exporter. Each pound of the Alden Apples represents eight pounds of the fresh Apples, large quantities of which, shipped from New York, are sold in England at $60 per ton, though often bruised and beginning to decay. The Alden Apple is better for cooking purposes as well as more convenient, and much cheaper. The price leaves a fair profit to the orchards and drying-houses, though there is less profit on the Apple than on many other fruits for California which has almost a monopoly in our continent of the more delicate and more costly, and not less prolific Prune, Plum, Apricot, Fig, Grape, and Zante Currant. There is no European dried Prune or Zante Currant equal in elegance of appearance, none superior in delicacy of flavor to those prepared by the Alden drying-houses in this State, and these merits will, at no distant time, be recognized in every market where wealth is the servant of luxury.

Coverings for Wounds of Trees.—It often happens that, either by intention, as in pruning, or by accident, trees are wounded in various ways. A common practice is to cover large wounds with coal tar; but this is objected to by some as injurious to the tree. Experiments made in the orchards and gardens of the Pomological Institute, at Ruthlengen, in Germany, go to show, however, that its use in covering large wounds is not injurious, but that, on the contrary, a callus readily forms under the tar, on the edges of the wound, and that the wounded part is thus protected from decay. There is, nevertheless, another objection; if the tar is applied a little too thick the sun melts it and it runs down on the bark of the tree. This can be obviated by mixing and stirring, and thus incorporating with the tar, about three or four times its weight of powdered slate—known as slate flour—the mixture being known as plastic slate and used for roofing purposes. It is easily applied with an old knife or flat stick, and, though it hardens on the surface, it remains soft

underneath. The heat of the sun does not melt it, nor does the coldest winter weather cause it to crack, neither does it peel off. The same mixture is also useful for other purposes in the garden. Leaky water-pots, barrels, pails, shutters, shades, etc., can be easily repaired with it, and much annoyance and loss of time be thus avoided. It will stick to any surface, provided it be not oily; and as it does not harden when kept in a mass, it is always ready for use.

Don't Crowd Your Trees.—Few persons escape making the great mistake of planting trees too close together. This is especially observable in a majority of cases where trees are planted in groups upon lawns. While the trees are small they look too scattering, therefore few persons can withstand the temptation of crowding them on account of the improved appearance at the time of planting, forgetting that in a few years a portion must be removed (which is seldom, if ever, done), or all will be ruined. Evergreens in particular are, as a rule, planted too close, and the deformed specimens, in consequence, to be seen in both public and private grounds in all parts of the country show the folly of this almost universal practice. We seldom go a mile from home without seeing failures in the cultivation of evergreens, which are traceable to this one mistake of crowding. The trees are planted when only three or four feet high, and half as broad; but a half-dozen years makes a wonderful change in size and appearance, and unless planted ten to twenty or more feet apart, their branches become interlaced, and the symmetrical beauty of each crowded specimen is destroyed. Give room, or plant a less number, is a safe system to follow.

The Fuchsia.—We have seen some magnificent Fuchsia trees in this State. We have seen them heading high, and assuming the upright form of true tree-hood, and we have seen them climbing walls, covering the sides of low houses with their beautiful pendants. We have seen Fuchsias which we thought large and worth a boast until we read in a recent number of the London *Garden* an account which the Knight of Kerry writes from Valencia, Ireland, concerning a Fuchsia which he has: "I believe that at this moment it is one of the finest sights in the shrub way that can be seen. It measures just 148 feet 3 inches round the extreme tips of its branches, and would have been considerably larger had it not been stopped at one side to form into an arch to cross over a walk. The south side of it is one blaze of most beautiful blossoms, a condition in which it has been for some time. It is now exactly twenty-two years since it was planted, and during that time nothing whatever has been done to further its growth. It has simply been left to itself." This surpasses anything in the Fuchsia line which has ever come under our observation, and yet there are wonders yet unheard of in this State. Can any reader beat the Irish Fuchsia described above?

A Wonderful Tree. — About two miles from the city of Mexico, at a little place called La Cuba, is the old tree known in history as Noche Triste, under the branches of which, tradition has it, Cortes gathered together his little remnant of men on the sad night he was attacked by the Aztecs, and driven from the city. It is at least a remarkable old tree, and worth the ride to see for itself. It is a Cypress, of a variety that grows to an immense size in this

part of Mexico. It is more than a thousand years old, and about ten feet through at the base, and is gnarled and twisted in a wonderful way. It enlarges above, so at ten feet from the earth it is fourteen feet in diameter. At twenty feet it divides into two immense trunks. Fire was put to it a few years since, and the inner portion and large upper trunk mostly burned away. Probably the trunk and shell will live for ages. Three years ago the Mexican Government put a handsome stone and iron fence around it, so that no vandal hand can touch it. Perhaps no object about the city has for the reader of Prescott a greater charm than the old tree of Noche Triste.

Can Geese be Poisoned?—Wild geese are flocking to our plains and fields in countless numbers. There is not only excellent sport in shooting them, but they are also very palatable food. A fat young goose, well prepared for the table, is a luxury hard to be surpassed. Within the past three or four years, however, the question is being mooted whether it is altogether safe in eating them. It is known that at this season of the year it is very common, in fact, almost a general rule, for our farmers to put out large quantities of either strychnine and phosphorus, with the view of killing ground squirrels. In fact, there is a law compelling the destruction of squirrels. Their death is usually sought through the medium of poisoned wheat. Some contend that wild geese, in feeding upon grain fields are liable to get a portion of the grain prepared for the squirrels, and thus in turn poison people who feed upon the geese. Others assert, with a great show of argument on their side, that geese can not thus be poisoned. If so, more dead ones could be found on the fields and about the lakes; that for years the geese have been feeding in the same localities, yet no one ever was known to have found a poisoned goose, or a person who was made sick by eating them. We suggest that the question be submitted to some medical authority.—*Stanislaus News.*

Antiquity of the Tomato. — *Science Gossip*, an English journal, in relation to the time which has elapsed since the Tomato was cultivated in gardens, states that Galen, who lived in the second century, used the name Lycopersicum, now applied to the Tomato, but it is not known to what plant he alludes. But an Italian writer, in 1561, thinks Galen meant the Tomato. Dodoens, a Dutch botanist, describes it as grown in his time (in 1583), and as eaten dressed with pepper, vinegar, and oil. Gerard mentions it in his "Herbal" in 1597, and calls it Pomum amoris, and describes red and yellow fruited sorts. Parkinson, in 1656, says it is cultivated only for curiosity, and "for the amorous aspect or beauty of the fruit." A century afterwards Miller states it was used in soups. Coming down later, we remember its extensive use on the table, cooked and uncooked about the year 1825. To this we may add that only since thirty years has the Tomato been well known for its edible qualities in the United States, and only since twenty years has this valuable esculent come into general use and been appreciated as it deserves.

Plants Piercing Asphalt.—The following curious example of the lifting and forcing power exerted by plants in their growth, is taken from the London *Garden:* "About four or five years ago the platforms at our station here (Mitcham Junction) were laid with a

thick coating of asphalt. Nevertheless, such is the force of growth and endurance existing in the roots of the Coltsfoot (*Tussillago farfara*) that every year it forces its way through the asphalt, despite the hardness of that material. The asphalt is pushed up into little hillocks, which gradually crack; very soon the young leaves make their appearance, and afterward the whole plant. The common Thistle I have also noticed doing the same. Let any one take a cake of asphalt and try to push a stick through it; he will then be able to realize how great must be the vital force exerted by the plant roots in question, which, by adding particle after particle to their structure, are enabled to upheave and displace such a hard, compact material as asphalt."

The Lily of the Mines.—The *American Naturalist* notes the discovery, in an abandoned drift in a mine in Nevada, of a remarkable fungus. It was growing from a beam 400 feet below the surface of the earth, and was three feet four inches in length, and of a light buff color. It "consisted mainly of a three-parted stem, two or three inches in diameter, attached by means of a disk eight or ten inches wide." The stem was "divided into short branches, greatly resembling in shape and arrangement the young antlers of a stag, the three terminal ones being much the most vigorous and conspicuous, forming a perfect trident." The plant is called by the miners the "Lily of the Mines," and has been named by the naturalist first describing it, *Agaricus tridens*.

How to Keep Bouquets.—There are various receipts for keeping bouquets fresh. Some people stick them in moist sand; some salt the water in the vases, and others warm it; others, again, use a few drops of ammonia. My rule is, to cool the flowers thoroughly at night. When the long day of furnace-heat has made the Roses droop, and their stems limp and lifeless, I clip them a little, and set them to float in a marble basin full of very cold water. In the morning they come out made over into crisp beauty, as fresh and blooming as if just gathered. All flowers, however, will not stand this water-cure. Heliotrope blackens and falls to pieces under it; Azaleas drop from their stems, and Mignonette soaks away its fragrance. For these I use dry, cold air. I wrap them in cotton wool, and set them on a shelf in the ice-chest. I can almost hear you laugh, but really I am not joking. Flowers thus treated keep perfectly for a week with me, and often longer.—*St. Nicholas.*

METEOROLOGICAL RECORD,

For the Month ending November 30, 1876.

(Prepared for The Horticulturist by Thos. Tennent, Mathematical Instrument and Chronometer-maker, No. 18 Market Street.)

BAROMETER.

Mean height at 9 A. M.	30.17 in.
do 12 M.	30.17
do 3 P. M.	30.16
do 6 P. M.	30.15
Highest point on the 25th at 12 M.	30.33
Lowest point on the 3d at 6 P. M.	29.96

THERMOMETER.

(With north exposure and free from reflected heat.)

Mean height at 9 A. M.	57°
do 12 M.	62°
do 3 P. M.	62°
do 6 P. M.	56°
Highest point on the 6th at 3 P. M.	69°
Lowest point on the 28th at 6 P. M.	52°

SELF-REGISTERING THERMOMETER.

Mean height during the night	45°
Highest point at sunrise on the 18th	50°
Lowest point at sunrise on the 29th	40°

WINDS.

North-and north-west on 12 days; south and south-east on 10 days; west on 8 days.

WEATHER.

Clear all day 10 days; cloudy all day 4 days; variable on 16 days; rain on 3 days.

RAIN GAUGE.	Inches.
4th	0.06
16th	0.02
17th	0.15
Total	0.23
Previously reported	2.98
Total up to date	3.21